LANDSCAPES AND PLANTATIONS ON TOBAGO: A REGIONAL PERSPECTIVE

BY

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"A people without a knowledge of their past history, origin and culture is like a tree without roots."

Marcus Garvey

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Any research project is a cooperative effort involving not only the researcher, but a host of others. Peter R. Schmidt served as my committee chair. He reined me in when I got overly enthusiastic, and provided a sounding board for my ideas. Peter's principal contribution, however, was his faith that I would do my part professionally. In addition, his knowledge of African cultures, both past and present, made me aware of potential avenues for understanding slave life on Tobago.

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Kathleen A. Deagan and William F. Keegan are the remaining two anthropologists on my committee. Between the two of them, I had access to a great deal of knowledge about

Caribbean history and prehistory. In addition, Kathy's commitment to the archaeological record and her insistence that excavation should only be undertaken in the absence of other data sources led to a largely survey methodology, while Bill's positivist epistemology within an economic framework contributed a great deal to the theoretical underpinnings of my research.

The final member of my committee, Ralph B. Johnson, provided a non-anthropological viewpoint, encouraging me to present my research in a way that could be understood by a less specialized audience.

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Final production of this dissertation has been a long process, aided along the way by many people. Bryan Page kindly abandoned his office in the University of Miami

Anthropology Department so that I would have a place to write, while his colleagues, Ann Brittain, Robert Halberstein, Edward LiPuma and Linda Taylor have all provided moral support and occasional guidance. Natasha Elmslie had an unfailingly sympathetic ear and cheerful words of encouragement. The Departments of Architectural Engineering and Geography, University of Miami, allowed me to use their computers to produce the graphics included in this dissertation, as did the University of Florida Department of Surveying and Mapping and the University of South Carolina Department of Civil Engineering.

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PREFACE

The government of the Caribbean island of Tobago has recently embarked on an ambitious plan to develop the island for tourism. In doing so they enter into direct competition with more established Caribbean destinations. Although the present development plan focuses primarily on the "sun and fun" vacationers that typify Caribbean tourism, the government recognizes that due to the relatively undeveloped status of the island the natural environment offers an additional selling point.

The underdevelopment of Tobago has resulted in the preservation of a broad variety of archaeological sites on the island. Most have yet to be systematically explored. In recognition of the potential value these cultural resources have for tourism development, the Tobago Archaeological Program, a joint effort of the Tobago House of Assembly and the University of Florida Institute of Archaeology and Paleoenvironmental Studies, was initiated to conduct archaeological research on Tobago in 1986. The focus of the Tobago Archaeological Program to date has been on the remains of the many sugar estates on the island. The survey results reported here continue that effort. Future

research will focus on additional site types, both prehistoric and historic.

Sugar estates have been the focus of the Tobago Archaeological research program because they are the most visible extant material evidence of Tobago's past. All date primarily from the mid-eighteenth to the mid-nineteenth century, and record the colonization of Tobago by the British in the 1760s, her rise to prominence as the foremost sugar-producing Caribbean island at the turn of the nineteenth century, and her gradual fall into obscurity with the eventual collapse of the Caribbean sugar industry.

Although the island was occupied by the French on two occasions after British colonization in 1763, for the most part it remained in British hands. In 1898 it was made a ward of the neighboring and much larger island of Trinidad, the two becoming an independent republic in 1962.

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LANDSCAPES AND PLANTATIONS ON TOBAGO: A REGIONAL PERSPECTIVE

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Chair: Peter R. Schmidt
Major Department: Anthropology

Final colonization of Tobago occurred in 1763 when the island was ceded to Great Britain by the Treaty of Paris. Almost immediately, efforts were made to put the land into sugar production. The survey reported here focused on locating all extant remains associated with sugar estates in St. David's Parish, covering an area of approximately 8720 acres (13.6 square miles). These include primarily sugar factories where muscovado sugar, molasses and rum were produced, estate houses where the estate owner lived, and estate villages where the labor used on the estate was housed. A variety of ancillary structures may also be present on a given sugar estate.

The survey located remains associated with 20 of the 22 sugar estates extant in St. David's Parish in 1811. These included 22 sugar factories, 15 estate houses and three estate villages. Based on these results, a model of plantation layout was formulated. The principal factor affecting layout is the location of the sugar factory. Factories are sited with primary reference to a water source for rum production and access to transport. Estate houses are located in peripheral positions overlooking factory locations. Secondary factors affecting estate house location appear to be visibility and view, discussed with reference to internal functions enhancing estate operation, and external functions enhancing the status of the planter. The concept of a "premier estate" that produces goods for sale to other estates is introduced, and preliminary archaeological and historical criteria by which such estates can be defined are presented.

Limited subsurface survey and excavation was undertaken in one estate village. This program was intended to reveal the internal layout within the village, but met with only limited success. Sufficient material was recovered, however, to give a preliminary view of slave life on Tobago, discussed with reference to the economic history of the island and with reference to first-hand observations presented in contemporary, often unpublished, sources.

CHAPTER 1
THE SAINT DAVID'S PARISH ARCHAEOLOGICAL SURVEY

The archaeological survey reported here examines the settlement pattern of sugar estates within St. David's Parish, one of seven parishes that make up the Caribbean island of Tobago (Figure 1-1). These parishes were defined by survey between 1763 and 1765 (Niddrie 1961) after the island, whose ownership had been in dispute throughout the 265 years since its discovery by Columbus in 1498 (Archibald 1987:6), was finally ceded to the British by the Treaty of Paris in 1763 (Ragatz 1963). St. David's Parish covered an area of 8720 acres (approximately 13.6 square miles) as originally surveyed (Jefferys 1778). In 1811 22 sugar estates were in operation within the parish (Young 1812a).

Research Goals and Significance

The central research question addressed by the St. David's Archaeological Survey is: how did the major cultural groups occupying Tobago during the period of British colonial occupation view and utilize the available landscape? Primarily, these groups consisted of European planters and African slaves. Each group had different and largely separate goals and needs rising from their disparate

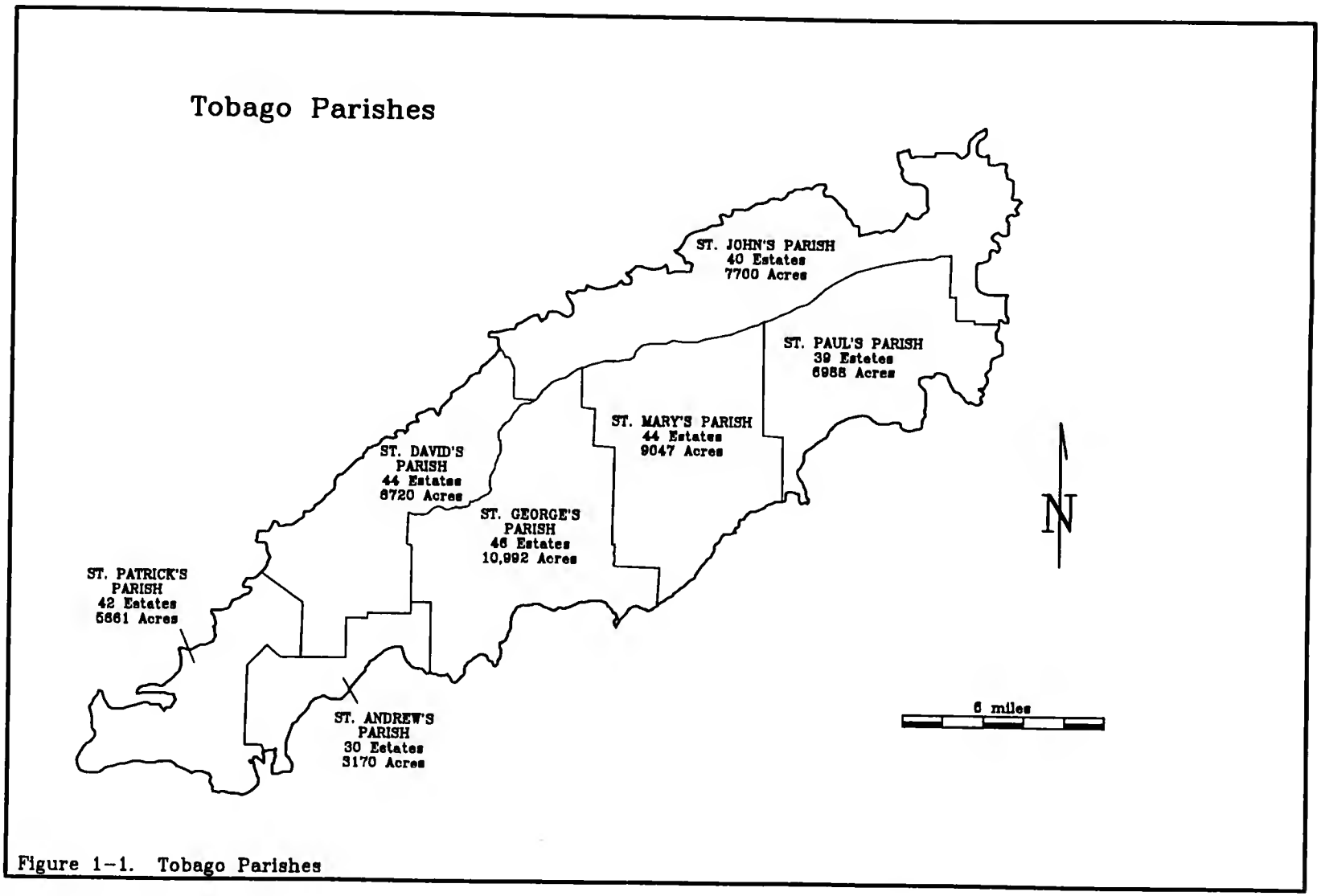

Figure 1-1. Tobago Parishes

cultural backgrounds and their dissimilar roles within the plantation production system. Both groups met these goals and needs by accessing the available natural environment using familiar, culturally-derived techniques appropriate to their African and European backgrounds.

The primary goal of the Saint David's Survey was to generate a model to account for the patterned arrangement of sugar estates on Tobago with specific focus on the location and layout of the structures present on those estates.[1] Higman (1988) has presented a model of plantation layout which forms the departure point for this dissertation. His research is derived from a collection of 1000 eighteenth and nineteenth century estate plans in the National Library of Jamaica showing the internal structure of the mapped properties. Higman's documentary sources were created primarily to show estate boundaries and the locations of buildings and activity areas relative to each other. This focus on the cultural environment built by the Jamaican planters was at the expense of detail relating to the natural environment.[2] Higman's analysis is therefore

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[1] These include primarily estate houses, sugar factories and estate villages. A variety of other structures may also be present on an estate.

[2] Natural features are incorporated into the Jamaican plans only when they have direct relevance to the economic value of the estate. Thus, rivers that supply water to drive the water wheel are commonly represented while alternative water sources that may have other uses are omitted.

limited both by the difficulties early cartographers had portraying three-dimensional space in a two-dimensional medium before the advent of contour lines and by the omission of many natural environmental features. As a result, his model is of limited utility to anthropologists.

The internal patterning of estates, both within and between structures and areas, reflects constraints imposed by the natural environment. Internal patterning is also affected by the culturally derived preferences of the planters who built the estates. Without a clear understanding of the natural constraints to estate layout cultural preferences are masked by unclear variation resulting from natural conditions. To understand and explain cultural preferences a model that better incorporates environmental constraints is necessary.

This dissertation presents a model of plantation layout that initially focuses on the natural environment. With constraints to layout resulting from environmental factors such as local topography and hydrology understood, it becomes possible to profitably examine the choices made by the planters in establishing a particular layout. These choices reflect both the economic goal of sugar production, that of amassing funds, and culturally dictated preferences for one location or layout over another. These include primarily the selection of estate lands with minimal impediments to transport and construction of the built

environment to reflect their British heritage and cultural affiliation.

Methods

The individual methods adopted here are standard practice for prehistoric and historical archaeologists. As integrated elements in an overall research design these methods have not been applied by plantation archaeologists. The specific methods included:

1--A documents search of primary and secondary sources to identify sites and their approximate locations, and to create a historical context within which the research results could be understood.[3]

2--A regional surface survey to physically locate the material remains of identified sites and the local environmental contexts within which they occur. Based on this survey, broad patterns of site layout are identified and an initial model formulated.

3--Intensive surface survey at selected sites to reveal specific variation not accounted for by the initial model.

4--Limited excavation at an estate village to recover archaeological data that was not otherwise available relating to the village's internal structure.

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[3] In the course of the documents search data were encountered which did not have direct relevance to the research problems addressed. Where these data are not otherwise available in the published literature or appear in obscure or rare books they are included in this dissertation, primarily in tabular format, to increase their accessibility.

Organization

The structure of this dissertation reflects the methods employed. The first part, Chapters 2 through 5, is primarily derived from the documents search. It presents the historical and environmental context within which the settlement of Tobago occurred. Chapter 2 describes the island's physical features, features which constrained settlement in some areas while encouraging settlement in others. Chapter 3 addresses the question of why, within the context of a rapidly developing Caribbean economy, permanent settlement did not occur on Tobago until the mid-eighteenth century. Chapters 4 and 5 present an economic history of Tobago. While several good, book length economic histories of the Caribbean have been published (e.g. Curtin 1990; Green 1976; Knight 1978; Ragatz 1963; Williams 1970) only one focuses specifically on Tobago (Nardin 1969). As it is in French and has only a limited distribution, Chapters 4 and 5 are presented to familiarize the reader with economic trends that effected Tobago.

The second part of the dissertation, Chapters 6 through 8, is archaeologically oriented. Although it reflects information encountered in the documents, particularly spatial information projected graphically, for the most part Chapters 6 through 8 present the approach to and results of archaeological research. Chapter 6 discusses the survey research design, derived from a materialist theoretical

perspective. Chapters 7 and 8 present the data recovered during the course of archaeological research--Chapter 7 the results of the regional survey and Chapter 8 the results of the intensive survey and limited excavation.

In the final chapter, Chapter 9, synchronic and diachronic models of estate layout are presented. They are based initially on a functional interpretation of building location and layout. In turn, instances where enhanced function does not appear to be a principal goal of the builders are specifically defined. In these instances more speculative cognitive or symbolic explanations are discussed. Though the recovery of material culture from subsurface contexts was not a primary goal of this research, a discussion of the artifacts recovered during excavations at one estate village is presented.

CHAPTER 2
PHYSICAL ASPECTS OF TOBAGO

Physical Description

The Caribbean island of Tobago is situated at latitude 11°15′ N and longitude 60°40′ W, the extreme southeastern point of the Lesser Antillean island chain. Its closest neighbor is the island of Trinidad, 18 miles to the southwest, while the island of Grenada lies approximately 80 miles to the northwest.

Tobago is small, covering an area of approximately 116 square miles (Figure 2-1). The island trends from northeast to southwest, and is approximately 26 miles long by eight miles wide at its widest point. A typical width, however, is more on the order of three to five miles. The most prominent feature of the island is the dorsal main ridge, which extends about 13 miles southwest from the northeast end of the island. Roughly 550 to 580 meters in height, the ridge is not dominated by any single peak. Rather, there are several peaks over 520 meters in height distributed all along the ridge-line. The northern and eastern flanks of the main ridge slope steeply down to the sea, while to the southeast they are somewhat less steep. To the southwest, foothills of the main ridge give way to rolling terrain, and

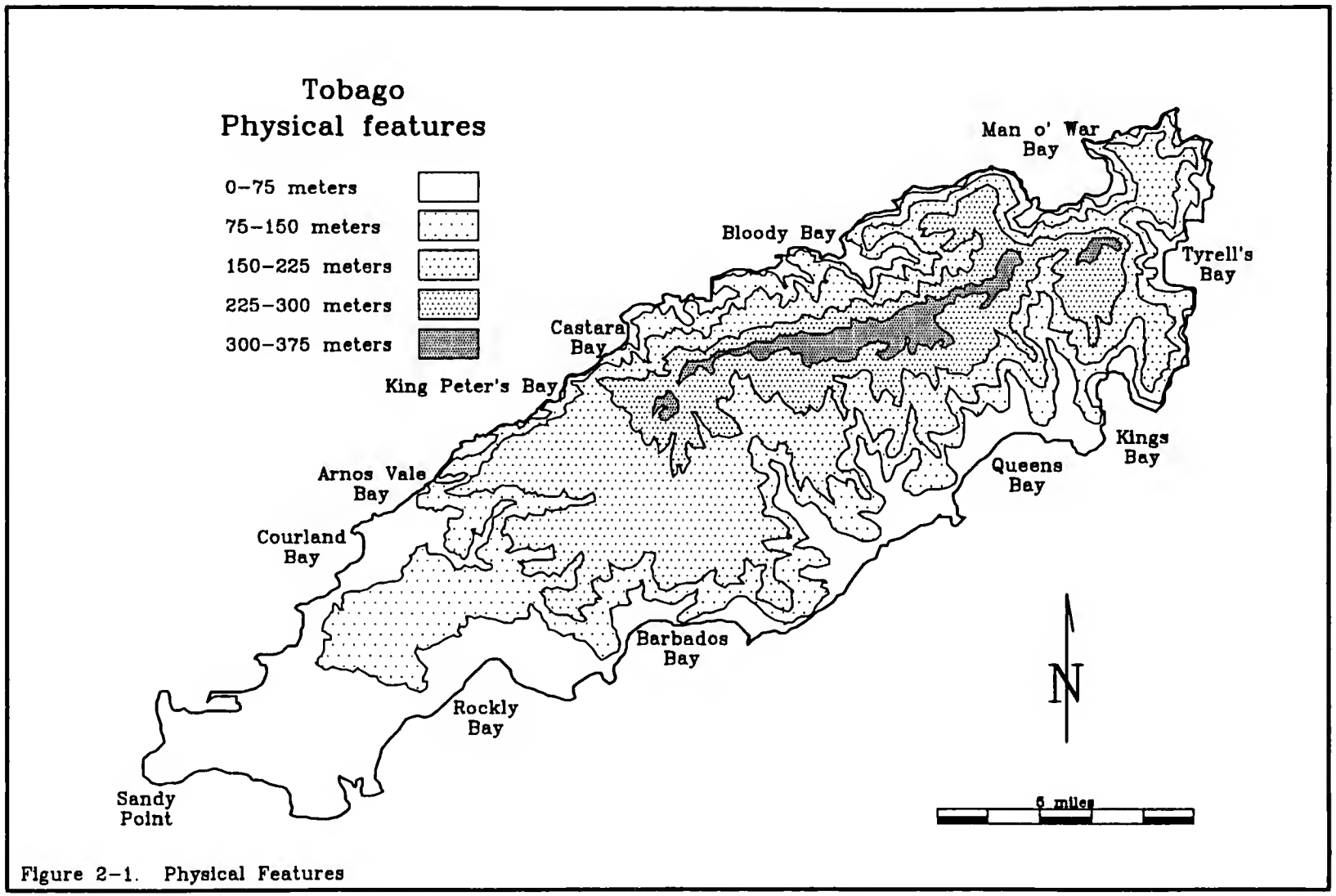

Figure 2–1. Physical Features

eventually to a relatively flat littoral plain at the island's extreme southwestern tip at Crown Point.

The British colonization of Tobago was undertaken with the express intention to create an agricultural economy based on the large-scale production of crops for export to foreign markets. At the time of settlement it was widely recognized that sugar was the most lucrative of these crops. The configuration of early settlement reflects the perceived suitability of lands for the production and processing of cane. In the eyes of the would-be planters, the most important considerations in the choice of plantation lands were topographic and, secondarily, hydrologic constraints. The factors effecting island topography and hydrology rest on the underlying geologic structure of the island (Figure 2-2).

Geomorphology

The most recent geomorphological studies of Tobago indicate that the island's current position at the northeastern corner of the South American continental shelf is serendipitous. Rather than being closely related to the South American continent, as Trinidad is, it now appears that the geologic components of Tobago are petrographically and geochemically distinct from those of Trinidad, despite their close proximity (Wadge and McDonald 1985), and that the two islands are separated by a major fault zone

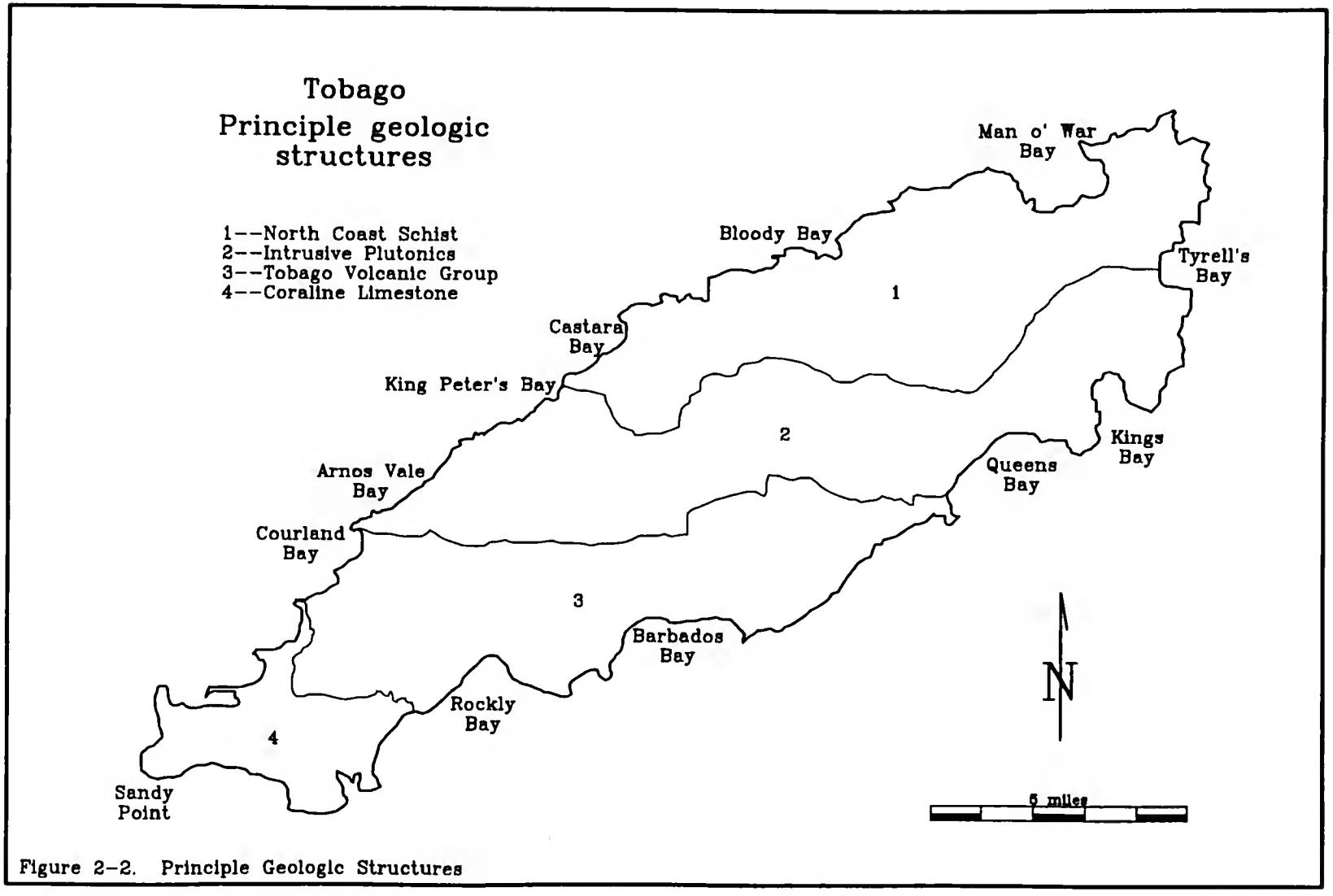

Figure 2-2. Principle Geologic Structures

(Robertson and Burke 1989; Speed et al. 1989). Instead, Tobago is the eastern-most member of an oceanic island archipelago that formed some 120 million years ago. Subsequently, tectonic movement resulted in a collision between this archipelago and the South American continental shelf. This gradual collision proceeded from west to east, with Tobago being the last island involved. By a complex process, then, it, along with the islands of the Dutch Antilles and several of the Venezuelan possessions, was accreted to the continental shelf by tectonic drift some 65-70 million years ago (Snoke et al. 1990b).

While the relationship between Tobago and the rest of the Lesser Antilles to the north is more uncertain, Tobago appears to be geomorphologically distinct from the more northerly members of the island chain. Where the majority of the Lesser Antillean islands are characterized by features of recent or current volcanic activity and a volcanic core surrounded by effluvial skirts sloping gently to the sea (Niddrie 1961:2), the rocks of Tobago are primarily a complex intermixture of igneous and metamorphic origin (Snoke et al. 1990a, 1990b).

The geologic core of Tobago, the basement rocks around and upon which the island is formed, is composed of three pre-Cenozoic belts trending east-west and roughly transecting the island (Snoke et al. 1990b). The oldest of these belts, the North Coast Schist (NCS), contains rocks of

volcanic origin that were heated, compressed and tilted by an intrusive group of rocks which had solidified far below the earth's surface. The NCS forms Tobago's Main Ridge and the steeply sloping north coast. The plutonic intrusion caused intensive warping, deformities and fractures in the NCS, and are the second component of Tobago's three pre-Cenozoic belts. The plutonic intrusion, together with the NCS, forms the jagged interior of the island. The intrusion also uplifted other rocks of volcanic and sedimentary origin, the Tobago Volcanic Group (TVG), which overlay the plutonic group. The TVG is the final component of Tobago's geological underpinnings, and is exposed on the southern skirts of the island, extending around the southwestern flanks of the main ridge.

Once Tobago's core had formed, the genesis of a fourth rock group was initiated by erosion/deposition of existing rock and by offshore coral growth. The primary component is coralline limestone, which makes up the coral lowlands that dominate the southwestern end of the island. The presence of this formation is indicative of as yet undated tectonic uplift and/or sea level subsidence (Snoke et al. 1990b). This may have occurred in two stages, as a terrace is evident in the coral lowlands at about 20 meters above sea level (Niddrie 1961:5).

Topography and Hydrology

The four rock groups which form Tobago are differentially resistant to erosion. In addition, their resistance to erosion is enhanced or mitigated by their slope. These factors allow the division of the island into four topographic and hydrologic regimes (Figure 2-3). As moisture falls on the island in the form of rain, it forms rivulets, streams and rivers which carry it to the sea. Depending on the erosional resistance and slope of the underlying geological structures, these drainages may be short and steep or long and gently sloping.

The shortest and steepest drainages exist on the northern slopes of the main ridge, and run to the Caribbean Sea. While the NCS which underlies the ridge has a high erosional resistance, it is steeply sloped. Runoff water is thus fast moving and creates steep declivities, particularly in the presence of the localized faulting characteristic of the NCS. Little southern drifting of the headwaters of these streams has occurred, an action which would have lengthened their courses, because at the top of the ridge the transported water has not yet developed either the speed or the volume which would allow it to downcut the underlying structure.

A second topographic and hydrologic regime exists on the southeastern flanks of the main ridge. Here the underlying structure consists of the intrusive plutonics and

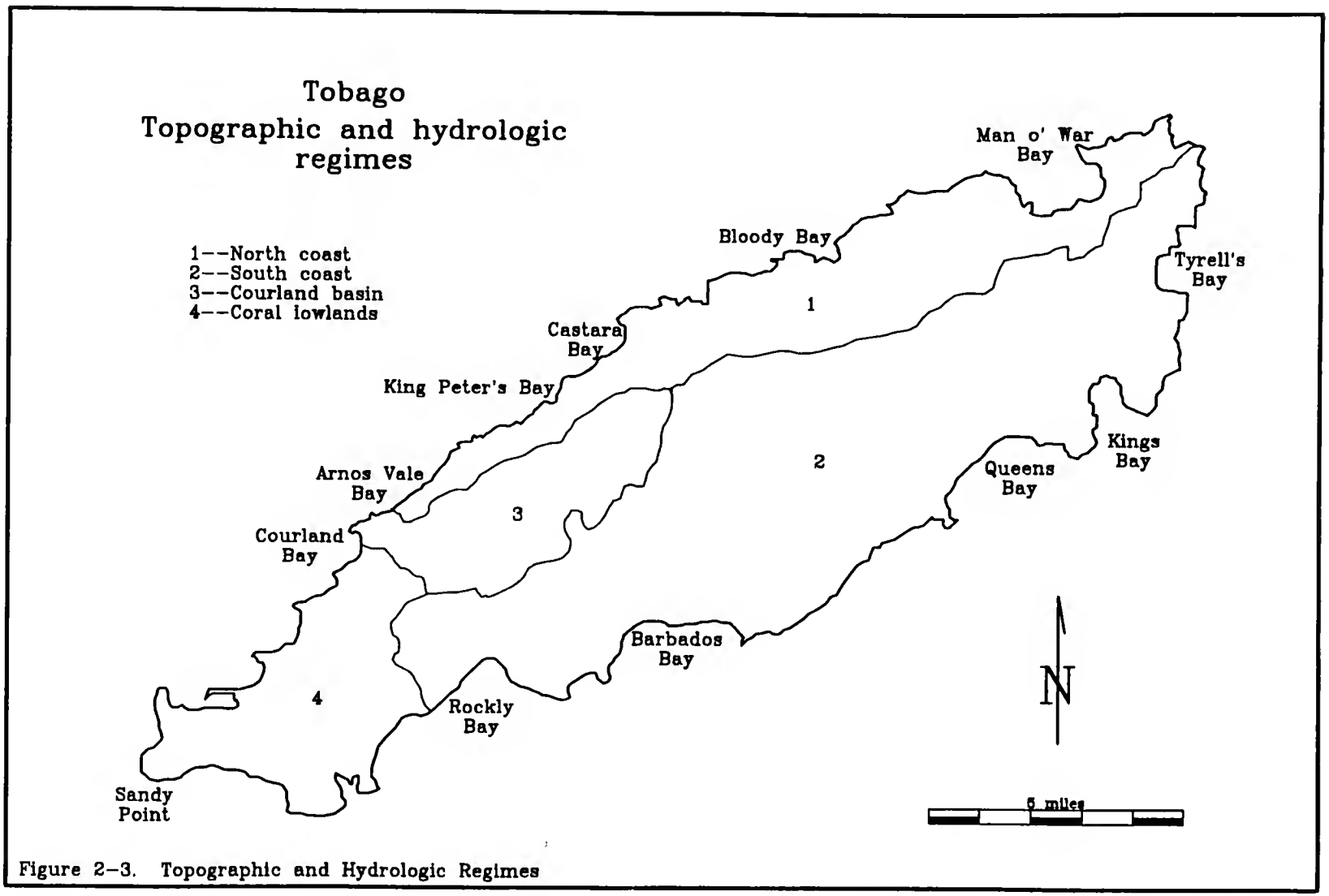

Figure 2–3. Topographic and Hydrologic Regimes

TVG groups. Both erosional resistance and slope are less acute, resulting in a series of fairly long but deeply incised drainages. Shelfs of more resistant rock occur at elevations of about 60 meters above sea level and lower shelfs cut by wave action when sea level was higher relative to land surface occur at about 20 and 7.5 meters above sea level. All cause waterfalls or rapids at these elevations. In addition to falls and rapids, the rivers and streams of the southeastern flank are characterized by low-lying, occasionally broad floodplains as they approach the southeastern coast. Due to the size of their drainage basins, all are perennial and subject to frequent and violent flooding during the rainy season. In contrast, during the dry months from December to June, the water courses may not even have sufficient flow to break through the sand bar barriers erected by wave action at their mouths (Eubanks 1992:57; Niddrie 1961:4-5). Drainages in this, the island's southeastern slope, feed and include the Bacolet River, the East and West Hillsborough Rivers, the Goldsborough River, the Richmond River, the Argyle River, and the Louis d'Or River.

The sole member of the third topographic and hydrologic regime is the Courland River. Arising in the NCS group, the Courland has managed to break through to the broad, gently sloping members of the TVG that occupy the area immediately southwest of the main ridge. While the same shelves that

affect the southeastern drainages affect the Courland, the more gently sloping terrain has resulted in a decreased flow velocity and a corresponding reduction in river downcutting. The hills in the Courland drainage area, while still steep, are thus less high above the river than their counterparts on the southeastern slope. Decreased slope has also allowed the river to take on a more meandering aspect than its counterparts, creating a rolling countryside and reducing the violence of seasonal flooding (Niddrie 1961:4).

The final topographic and hydrologic regime covers the coral lowlands at the southwestern extremity of the island. Almost flat, drainage in this area occurs more by seepage through the limestone itself, and rather less by surface runoff. Surface water is scarce during the dry season, occurring most frequently as springs where underlying TVG rocks approach the surface. The frequently heavy precipitation of the rainy season, however, has produced a system of shallow (ca. 35 ft) valleys throughout the coral lowlands, providing at least some topographic relief (Niddrie 1961). The presence of at least two volcanic "necks" (the more erosionally resistant core of extinct volcanoes) in the vicinity of the village of Mt. Pleasant contributes further topographic variety (Eubanks 1992).

Climatic Conditions

The two most important elements of Tobago's weather patterns affecting cultivation are precipitation and the velocity and direction of the prevailing winds. As with the other islands of the Lesser Antilles, Tobago experiences a very predictable breeze. Blowing on a year-round basis at a fairly steady 5-12 knots, the breeze is from the northeast during most of the year. During mid-summer, however, without losing any velocity it may shift towards the south, picking up additional moisture, raising humidity and resulting in at least some rainfall throughout the year (Niddrie 1961:5-6).

By far the majority of the rainfall, however, is seasonal. Although the amount of seasonal rain varies throughout the island (Table 2-1), Tobagonians generally refer to a wet season running from June to December and a dry season extending from January to May. Wet season rainfall usually occurs in the form of heavy convectional thunder storms of short duration, producing locally violent winds that last for but a short time. More continuous but less frequent rains are delivered by frontal systems accompanying the Intertropical Convergence Zone, and rainfall of up to one inch per hour has been recorded during these events. Fortunately for the inhabitants of Tobago, the island lies to the south of the main hurricane belt. Although tropical storms and hurricanes do occur, they are

rare, and tend to be less destructive than similar storms to the north. The last major hurricane to impact Tobago was Hurricane Flora in 1963. Prior to that, one must go all the way back to 1847 for a storm of similar magnitude, although smaller storms hit the island in 1780, 1790, 1831, 1891, 1909, 1918, 1928, and 1933 (Eubanks 1992:60-61; Niddrie 1961:5-8).

Table 2-1. Average rainfall in Tobago

Month	Average rainfall (in.)
January	4.8
February	2.8
March	2.3
April	3.7
May	5.6
June	9.2
July	9.6
August	8.8
September	8.9
October	9.1
November	9.4
December	11.4
Total	85.6

After Niddrie 1961:6

Epidemiology

A third consideration for the early planters when selecting their lands was epidemiological. Tobago's river valleys tend to be deep, with a corresponding high degree of humidity, and river and stream mouths are frequently blocked

by wave-borne sand bars in the dry season, creating pools stagnant water. In both instances, an ideal mosquito breeding ground is present. Where these features are coupled with coastal lagoons and mangrove swamps, malarial and other tropical infections became a real threat. Indeed, the early planters were highly cognizant of the fact that in Tobago's tropical climate, death by malaria or other tropical disease was a very real possibility (Young 1812a). Although they may not have recognized the disease vector, they attempted to minimize infection, avoiding high risk areas by locating in elevated positions where possible. Settlement pattern reflected these decisions, and in large part, these patterns persist today (Niddrie 1961:8).

Modern Settlement

Most of Tobago's existing road network has been in existence since at least the early nineteenth century. The modern towns and villages, on the other hand, were primarily founded in the post-emancipation period, after 1838, when former slaves left the estate villages provided them by estate owners. Figure 2-4 shows these features.

Today, life on Tobago revolves around the capital town of Scarborough. The Government is the single largest employer on the island, and most government offices are located in the capital. Banks and many small businesses are located in Scarborough as well. The largest population

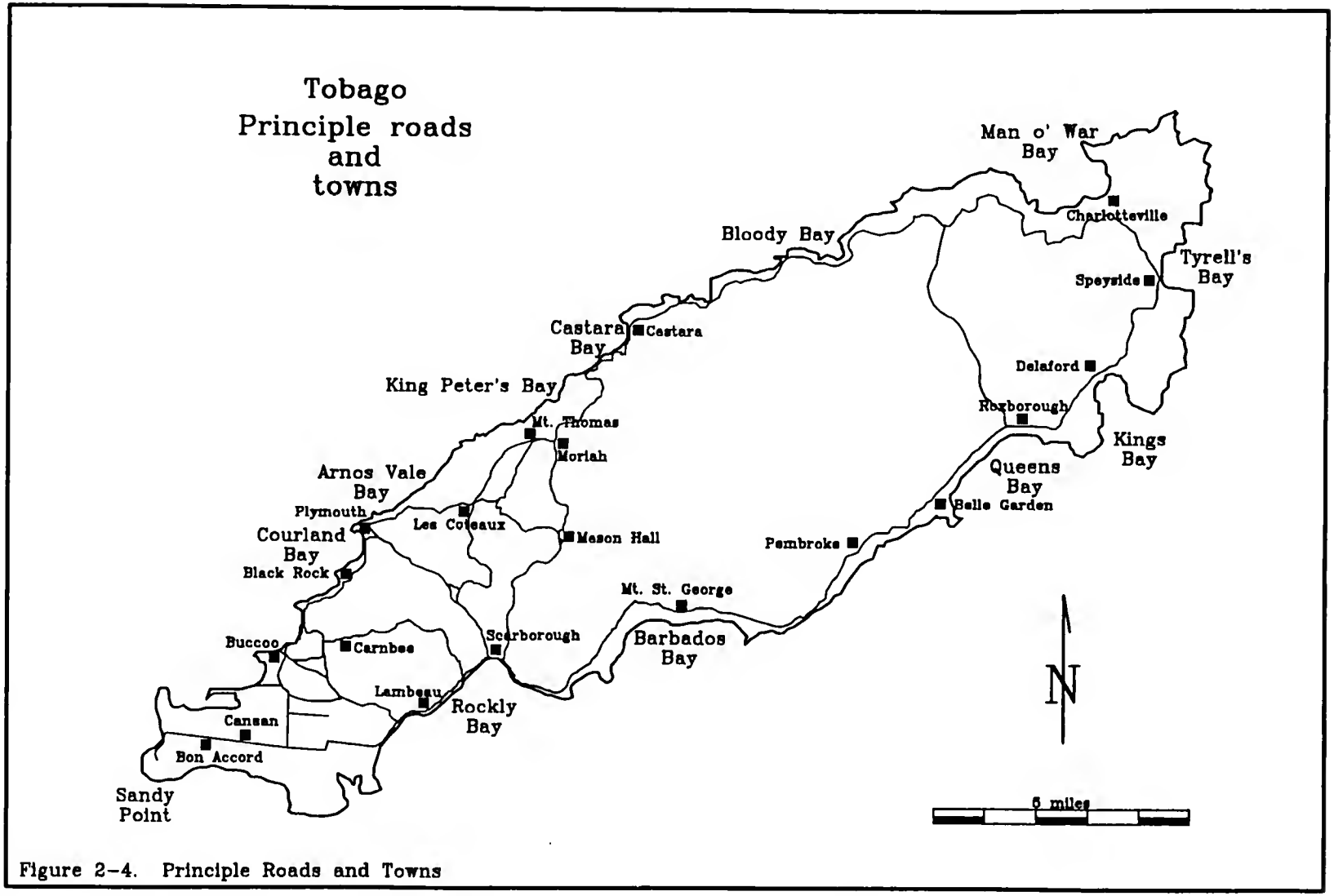

Figure 2-4. Principle Roads and Towns

concentration is within the town's environs, while many other people commute in on a daily basis, using both public and private transportation.

Though neither compares with Scarborough, two additional population centers are Roxborough and Plymouth. Roxborough is located towards the eastern end of the island on the southeastern coast, and since travel-time to Scarborough from there is fairly long, it duplicates many of the services available in the capital. It is likely that it existed prior to emancipation, at least as a village, though none of the contemporary maps confirm this.

Plymouth, in contrast, was one of the islands's earliest permanent settlements (see Chapter 4). Indeed, it may have been the very first town, as the Dutch settled nearby as early as 1628 (Boomert et al. 1987:9-10). Plymouth is located towards the western end of the island, and is the only major town on the northern coast. Though travel to and from Scarborough is easier than from Roxborough, Plymouth too duplicates many of the functions of Scarborough. Plymouth serves a portion of the burgeoning tourism industry as well. The luxury tourist hotels are located nearby, and since at least some tourists do not bother to rent transport, Plymouth serves as a marketplace for groceries or other necessary items. Plymouth also maintains much of the "quaintness" of former times, and many visitors to the island spend time in the town sightseeing.

Since the development of Crown Point Airport at the extreme southwestern tip of the island, the area in its vicinity has been developing rapidly. This area, too, serves primarily tourists, though of a different kind. The majority of the island's guest houses--small, inexpensive hotels offering functional living spaces--are located near the airport in the villages of Bon Accord and Canaan, principally in the former. These guest houses attract a less opulent clientele than the luxury hotels near Plymouth, and many small businesses have developed to serve them. Souvenir and grocery shops and stands abound, as do small restaurants and bars. The village of Buccoo, on Buccoo Bay, is rapidly being transformed from a fishing village into something more akin to Bon Accord, primarily due to its proximity to Buccoo Reef.

The remainder of the villages on Tobago remain largely unchanged. Most developed at around the time of emancipation, when freed slaves left the estates to pursue a livelihood based on peasant agriculture and wage labor on plantations (Niddrie 1961--see Chapter 5). Villages located in the interior of the island are primarily agricultural, while those on the coast support both agriculture and the local fishing industry. Examples of the former include Bethel, Les Coteaux and Mt. Pleasant, while examples of the latter include Castara, Charlotteville and Mt. St. George (Figure 2-4).

CHAPTER 3
FACTORS EFFECTING EARLY COLONIZATION EFFORTS

Early History

Tobago's early history is complex. From its first discovery by Europeans in 1498 until its final recapture by the British in 1804, the island changed hands more frequently than any other in the Caribbean (Niddrie 1961:42). The colonial flags of England, France, Spain, Holland, and the Duchy of Courland (modern-day Latvia), as well as the independent Republic of Trinidad and Tobago, have all flown over the island at one time or another. Comprehensive treatments of the early history of Tobago are available in Archibald (1987), Eubanks (1992) and Lichtveld (1974). Rather than simply reiterating their discussions, this chapter presents a broader treatment of events affecting the early history of Tobago. Foremost among these was the adoption of sugar cane as the major cash crop of the Caribbean, with the concomitant reliance on African slaves as labor. The events which led to the primacy of sugar are best understood by focusing on Europe, and on European attitudes towards the Caribbean (Mintz 1985; Wolf 1982).

Sugar

Columbus's voyages of discovery were sponsored by the Spanish crown, and Spain became the first dominant European power in the Caribbean and the rest of the New World. During the earliest period of Spanish supremacy there was a brief fluorescence of agricultural production in the American colonies. The Spanish recognized the potential of sugar very early in their colonization efforts. Cane was first introduced into Hispaniola by Columbus in 1493 on his second voyage (Mintz 1985:32). By the mid-sixteenth century, 40 to 50 sugar factories were in operation on Hispaniola alone (Las Casas, in Williams 1970:26,519). While these factories were fairly primitive when compared to the nineteenth century technology, they produced copious amounts of sugar (Williams 1970). During the initial period of Spanish production, however, Caribbean sugar was mostly sold in the extremely limited New World market, while the more extensive Old World demand was supplied by the Portuguese possessions in the Mediterranean and the Atlantic (Williams 1970).

By the second quarter of the sixteenth century the attention of the Spanish in the New World shifted away from agricultural production. After 1520 the goal of Spanish exploration was primarily the acquisition of precious metals. Indeed, precious metals were so important to the Spanish that one Historian states that "...it was gold which

determined the location of Spanish settlements, which led to their concentration on the Greater Antilles and to their neglect of the Lesser Antilles, except those which had strategic significance for the protection of the trade routes" (Williams 1970:24).

Initially, gold was recovered from deposits on Hispaniola. These were rapidly depleted however, and the focus of exploration shifted to other Caribbean islands and to mainland Central and South America. The vast riches of the Aztec and Inca Empires fired the imagination of Spaniards (Williams 1970). Many residents of the Caribbean re-emigrated to the mainland, while new arrivals from Spain tended to bypass the Caribbean entirely. Interest in the agricultural potential of the Caribbean declined as a result. The Spanish colonies on Hispaniola, and particularly Cuba, became key strategic points for protecting Spanish gold and silver shipments during the hazardous initial stages of the Atlantic crossing (Knight 1978).

Spanish dominance of the Caribbean lasted until the second quarter of the seventeenth century. During this period of Spanish hegemony no other European power possessed both the strength and the desire to gain a foothold in the Caribbean. It was not until the cessation, in 1621, of a truce between the Spanish and the Dutch that any European power could successfully challenge Spanish dominance. With

the end of the treaty, however, the Dutch quickly moved to usurp Spanish power. They accomplished this by first gaining control of the Atlantic sea-lanes. Dutch harassment and eventual destruction of the Spanish navy opened the way to settlement of the Caribbean by other European powers (Parry 1963). The British quickly moved in, settling Barbados and part of St. Croix (1625), Nevis (1628), Antigua and Montserrat (1632), and St. Lucia (1638). They, in turn, were rapidly followed by the French (Martinique and Guadeloupe) (Knight 1978:37-38). It was also during this period that European adventurers made the first serious attempts to settle Tobago (Eubanks 1992:67).

British and French forays into the Caribbean were made with the intent to establish agricultural colonies (Curtin 1990:77). Despite early Spanish success in cane cultivation, however, the crop was not immediately adopted by the British and French colonists. In part, this was because a market was not immediately available to the British and the French. Due to the nearly continuous warfare between the various European powers during the sixteenth and early seventeenth centuries, what little sugar made it to the British and French home markets was very expensive. The resulting price put sugar beyond the means of the majority of the population. It was only with the initiation of production in the British and French Caribbean in the mid-seventeenth century that prices began to decline,

and popularity of the new commodity began to rise. From its early beginnings as a tasty but rare condiment on the European table, the market demand became increasingly elastic and sugar production rapidly expanded (Mintz 1985).

During the first fifteen to twenty years of colonization, after an initial period of experimentation with a variety of crops, it became apparent that tobacco production offered the most lucrative returns, and the early successes of the new colonies were largely based on this crop (Batie 1991). The economic potential of tobacco was first realized by the British colonists of Virginia. They first began growing the crop around 1616, and by 1619 a planter could make profits of up to £200 yearly at a time when the average laborer in England was making a mere £10 8s. per year (Batie 1991:39). The Caribbean colonists quickly adopted tobacco cultivation.

The success of tobacco was so great that Europeans emigrated to the new colonies in large numbers, either to set themselves up as planters or to work as laborers for a period of indenture, after which they could hope to be free to buy land and start plantations of their own. Predictably, the steady increase in the number of tobacco planters and laborers soon caused production to outstrip demand. By 1635 prices were in decline. Though this price reduction affected all colonists, it was particularly hard on those in Virginia, where few other crops could be grown.

To protect the colonies from price fluctuations, officials in Virginia and the Caribbean agreed to increase the price of tobacco artificially by severely limiting its production in the Caribbean. The French were coerced by threats of force into joining in this effort.

With the enactment of this agreement, the economy of the Virginia colony at least was stabilized. In the Caribbean, however, production of a new staple crop was necessarily promoted. Initially, cotton was the dominant replacement. It grew well in the Caribbean environment, and the knowledge, technology and labor required for its cultivation were minimal. In fact, cotton was so suited to the Caribbean environment that by 1639 prices were dropping, like those of tobacco had before, because of over production. By this time, however, the preconditions that would allow the successful cultivation of cane and manufacture of sugar had been met (Batie 1991). This initially occurred in Barbados.

Before sugar cane could be successfully adopted in the Caribbean as the dominant crop, three preconditions had to be met. The first preconditions relate, at least indirectly, to the high cost of the equipment necessary for sugar production. First, the islands upon which sugar production occurred had to be safe from foreign attack. Economically, it was poor practice to invest in sugar production hardware if that hardware was liable to

destruction by foreign invaders. Second, individuals needed access to sufficient capital to afford the initial investments in sugar technology. Both of these preconditions were realized in the Caribbean as a result of earlier tobacco and cotton production, and by the intervention of the Dutch.

In the early seventeenth century Britain was in the depths of a depression and on the verge of civil war, and many people chose to migrate to the New World. When tobacco prices began to drop in 1635, British emigrants to the colonies began to opt for the Caribbean, where a broader variety of opportunities was available, rather than Virginia. Barbados was a particularly desirable destination, as its environment proved to be particularly suitable for cotton production. Thus, by the time cotton prices began to fall, Barbados already had a greater population density than any other colony in the New World. The sheer numbers of residents, particularly when combined with Barbados' windward location (Curtin 1990), made the island reasonably safe from foreign invasion. At the same time, the success of cotton in Barbados created a sizeable upper class, an upper class that could afford to risk capital by investing in the equipment required for sugar production (Batie 1991).

The final requirement for successful sugar production was technical knowledge. The production of sugar is a

complex process, particularly in contrast to the relative simplicity of tobacco and cotton production. With sugar, aside from simply growing and harvesting the cane, one has to know how to reduce the cane juice to sugar and molasses, and how to produce rum. Knowledge of the processes was fairly commonplace by the late 1630s, but talent concentrated in other parts of the world. It remained for the Dutch to import the crucial knowledge.

The Dutch had initiated settlement in the Caribbean concurrently with the British and the French. However, rather than choosing to settle arable islands as the British and French had, the Dutch colonized the smaller, less agriculturally productive islands of Curaçao, St. Eustatius, St. Maarten, and Saba (Knight 1978:37). Their intention was to create trade entrepôts, an activity which, on a larger scale, had successfully supported the Dutch homeland. The success of these incipient trading centers, however, required a viable Caribbean economy. It was therefore in the Dutch interest to help the other colonists. As part of their campaign against the Spanish, the Dutch had earlier taken Portuguese Brazil, challenging the united kingdoms of Spain and Portugal.[1] The Brazilian economy at that time was dependent largely on sugar, and it was a relatively simple matter to transport the knowledge of sugar production

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[1] During this period the Portuguese and Spanish crowns were united, and any action against Portugal was an action against Spain.

from Brazil to Barbados (Batie 1991:45); in need of a cash crop to replace cotton and support the dense Barbadian population, the island's officials simply looked the other way. The Dutch, in turn, assured themselves of a ready market for their goods, foremost of which were African slaves.

Slavery

Europeans brought African slaves to the New World shortly after initial settlement. As early as 1502, the Spanish on Hispaniola began importing Africans (Rout 1976). This was initially done as an experiment, as the Spanish were quick to realize that the locally available labor, decimated by European diseases and debilitating labor in the fields and mines, was unsuited to the Spanish regime. By 1514, only 23,000 to 30,000 native inhabitants were left on the island, an island that may have supported up to eight million inhabitants in 1492 (Borah and Cook 1971-1977; Cook 1981). The Spanish travelled to other islands in search of additional labor, and these islands, too, were soon effectively depopulated.

While the enslavement of Africans was certainly practiced by the Spanish in the New World, it was not until the introduction of an economy based upon sugar production that slavery in the Americas reached full maturity. This initially occurred in northeastern Brazil. During the

period when Spain exercised exclusive control in the Caribbean and amassed a fortune in gold and silver from the conquests of Mexico and Peru, Portugal controlled an equally lucrative empire centered about the Mediterranean Sea and extending down the west coast of Africa. They also controlled northeastern Brazil, where they quietly instituted a plantation economy.

Not surprisingly given their previous experience with the crop in their Old World possessions, the Portuguese planters developed a sugar economy in Brazil. As had the Spanish, they quickly recognized the susceptibility of the local Native American populations to disease, and their consequent unsuitability for labor (Rawley 1981). Indeed, the situation in Brazil was exacerbated by the fact that Native American slaves could easily absent themselves from the plantations, fleeing to the interior where they could re-institute the economic and cultural system that had supported them in the past (Wagley 1971). Having been exposed to Europeans and their diseases for decades, however, and having immunity to a host of other tropical diseases common to both Africa and the New World, in Africans the Portuguese had the ideal labor force for New World plantations. An additional advantage was that enslaved African had little or no means of escape. As Eubanks (1992:42) puts it: "they were as alien off the plantation as they were on it."

When the Dutch conquered Portuguese Brazil in 1630 (Curtin 1990:91), they found a full-blown plantation economy based on the production of sugar and the enslavement of Africans already in place. Nevertheless, the Dutch recognized that without a steady supply of new slaves this type of economy could not last, since even with their disease immunities the African population of Brazil was not self-reproducing. This was due in part to the arduous working conditions of the plantation regime, and in part to the skewed sex-ratios of imported Africans--many more males were imported than females (Curtin 1969, 1979). To ensure the continued success of their new holdings, the Dutch seized Portuguese-held African ports on the Gold Coast and in Angola, securing for themselves a steady supply of slaves (Curtin 1990).

With access to slaves and with growing entrepôts in the Caribbean in need of a viable market, the Dutch were willing to share their knowledge of sugar production, stolen from Brazil, with the British colonists on Barbados (Batie 1991:45). The first recorded shipment of sugar reached England from Barbados in 1643 (Batie 1991:46). In that same year, production was initiated on the British-held portion of St. Kitts, and by 1644 the French had begun to produce sugar on Guadeloupe. The sugar boom was on in the Caribbean, and the rhythms of sugar production would eventually dominate almost the entire archipelago.

The Settlement of Tobago[2]

With the beginning of the industrial revolution, sugar was rapidly transformed from a luxury good, accessible only to the rich, to a staple food additive demanded by the vast European laboring population. It is within the context of this rapid increase in demand that the eventual settlement of Tobago is best understood. However, this did not occur until 1765, 122 years after the initiation of sugar production on Barbados. The question is, why, with the feasibility of such a potentially lucrative crop widely recognized, did Britain, France or Spain not bring Tobago into sugar production at an earlier date? The answer lies in a combination of factors, the most important of which is that it was advantageous for each government to deny access to Tobago to the others.

During the seventeenth century, when the agricultural resources of the Caribbean began to thrive, the geo-political importance of Tobago was recognized. With the exception of Barbados, Tobago is the most easterly of all the Caribbean islands. This was an era of sailing ships

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[2] Care must be taken when thinking of the "settlement" of Tobago. Tobago was "settled" on numerous occasions prior to 1763, most notably by the Dutch and the Courlanders in the 17th century. In addition, while the island had neutral status from 1748 to 1763, several individuals of various nationalities maintained permanent or temporary residences there, primarily for turtling. In this dissertation, the term "settlement" is used to denote the period of permanent occupation by British planters engaged in the cultivation of cash crops.

and, from Tobago, sailing ships catching the prevailing easterly trade winds could sweep the entire Caribbean island chain, bringing naval pressure to bear wherever and whenever the possessors of Tobago pleased. By the same token, ships from other islands had a difficult time maneuvering to Tobago in its upwind location. Thus, in the days of sailing ships Tobago occupied a very strategic position relative to the rest of the Caribbean. As the economic importance of the Caribbean increased with the realization of sugar as a cash crop, so too did Tobago's strategic importance. Consequently, no European power could afford to have Tobago colonized by another.

The strategic importance of Tobago lasted throughout the age of the sailing ship. As late as the beginning of the nineteenth century the rights to Tobago were still contested by the French because of its coveted strategic location. Indeed, French maps of Tobago made during the 1780s, and the road system along the rugged windward coast that they constructed during their occupation of that period indicate their preoccupation with Man o' War Bay at Charlotteville. They envisioned this as a possible naval depot from which to threaten the rest of the Caribbean, and its potential drew them back to the island as late as 1803-1804. The British, too, frequently included details of Man o' War Bay on their maps (e.g., Jefferys 1765), indicating that they also recognized this strategic potential.

Strategic location was the major factor which delayed the occupation of Tobago. Contributing to this was the incipient nature of cane cultivation and sugar production and soil fertility on the established islands of the British and French Caribbean. Following their successful introduction to Barbados in the mid-seventeenth century, cane cultivation and sugar production were rapidly introduced to other British and French islands during the late seventeenth and early eighteenth centuries. Their spread was driven by the need to meet an ever-increasing demand for sugar (Mintz 1985:36), as well as decreasing soil fertility on long-established plantations, caused by repeated mono-cropping and the corresponding decline in soil nutrients (Ragatz 1963). Nevertheless, it took time for sugar production to spread to all of the land suitable for cane cultivation, particularly on the larger islands of Jamaica and French Hispaniola (Haiti), and, to a lesser extent, Martinique and Guadaloupe. Whatever the cause of this continuous extension of cane cultivation, sufficient unoccupied land was available on established islands until the mid-eighteenth century.

Another factor contributing to the late settlement of Tobago was the island's topography. As noted in Chapter 2, Tobago is dominated by a mountainous interior. The sheer ruggedness of the topography make the main ridge, roughly two thirds of the island's total area, marginal at best for

sugar production. Transportation, from the cane fields to the sugar works, and from the sugar works to shipping points, would have been extremely difficult; maintenance costs were high, both for the estate roads themselves, and for the vehicles and the teams used to draw them. In short, much of Tobago was less well-suited for sugar production than many other Caribbean islands, and as a result it was one of the last to be brought on-line. Even during the height of its sugar production in the early nineteenth century, Tobago had only 35,134 of its roughly 74,400 acres occupied by sugar estates (Young 1812a).

Initial Settlement

The strategic location of Tobago, combined with the availability of land on other islands and the unsuitability of Tobago's topography for sugar production, acted to delay the effective settlement of Tobago until the last half of the eighteenth century. That strategic location was the most critical factor is evidenced by the fact that when the Treaty of Paris gave Britain the legal right to settle Tobago colonization almost immediately began, with a letter of patent dated 7 October, 1763. By 1765 an initial survey had been completed which began laying out lots for estates (Simpson 1765), and on 20 May, 1765, the first estate, consisting of lots 7 and 8 in St. George's Parish, was sold

to Alexander Stevenson (Nardin 1969:298-299).[3] This later became known as Hope Estate.

[3] There is some contention about the primacy of this sale. Woodcock (1866:41) says that the first lot sold, lot 1 in St. David's Parish, was sold to James Simpson on 20 March, 1766, while Archibald (1987:107) contends that Simpson bought this lot at the first land sale in May of 1765.

CHAPTER 4
SUCCESSFUL COLONIZATION

Introduction

Tobago is one of the so-called "ceded islands" acquired by the British as a result of the Treaty of Paris in 1763 (Ragatz 1963).[1] With the acquisition of the ceded islands, the British parliament imposed two conditions on settlement. First, in response to concerns that most of the new lands would remain idle in the hands of speculators, parliament required steady and large payments on purchased land, payments that could only be met by immediately putting the land into production.

> (Lands)...should be put up to sale at a price not less than five pounds per acre of the lands that were cleared and if the lands were uncleared at a price no less than one pound sterling per acre...(the purchaser)...should thereupon pay down twenty per cent of the whole purchase money and six pence sterling for every acre of which the lots should consist for the expense of surveying the same. ...(O)ver and above the twenty pounds per cent of the whole purchase money he should pay down ten pounds per cent of the whole purchase money within one year from the date of such Bill of Sale, ten pounds per cent more within the second year after the date of such Bill of Sale and twenty per cent within every successive year until the whole was paid... (CO 101/1:75, in Nardin 1969:296).

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[1] The others are Dominica, St. Vincent, Grenada and the Grenadines.

Second, parliament limited the amount of land that could be purchased by any individual, in order to limit the influence of individual planters in the plantocratic lobby:

> That no purchaser should be seized in his own name or names of others in trust for him of more than five hundred acres in the islands where the lands lie, ...and if so seized of a greater number, ...that the purchase and grant of so many as should exceed that number should be void and a proportionable part of the money paid thereon forfeited and the lands resumed and again exposed to sale (CO 101/1:75, in Nardin 1969:296).

Parliament's goal was to guarantee steadily increasing imports into the mother country without surrendering additional political power to the planter class. The effect was to impose twin constraints on Tobagonian planters: potentially insufficient land coupled with a payment schedule that could, perhaps, prove insurmountable (Ragatz 1963).

Land Sales

In all, seven land sales were held on the island (Table 4-1). The distribution of the acreage involved in these sales says much about the perceptions the European colonists had of the various parts of the island (Table 4-2). The first lots sold were primarily in St. George's Parish (see Figure 1-1). St. George's Parish was initially envisioned as the most acceptable site for a capital town, to be called Georgetown, by virtue of its proximity Barbados Bay. The most attractive selling point for Barbados Bay as the

Table 4-1. Land sales on Tobago

Convening Date	Acres Sold
19 May 1765	4000
12 May 1766	11,096
1767	14,975
1768	4632
9 April 1769	5183
5 June 1770	10,362
11 May 1771	8160
TOTAL	58,408

After Archibald 1987:107-123

location of Georgetown was its centrality relative to the rest of the island.

> Barbados Bay had the advantage of a central situation and tendered equal facilities for resort on business to the people of St. Mary's, St. Paul's and St. John's (the northeastern portion of the island),- or to St. Andrew's, St. Patrick's and St. David's (the southwestern portion of the island) (Young, in Archibald 1987:117).

In addition to its central location, the area of Barbados Bay was thought by the original colonists to be less conducive to the host of tropical diseases known to exist on the island.

Despite the central location of Georgetown and Barbados Bay, by the second land sale, buyer attention had shifted primarily to St. David's Parish (although with the exception of St. John's Parish land was sold throughout the island). This shift is attributed to the move by James Simpson to purchase Courland Estate, at either the first land sale or early in 1766 (see Chapter 3, note 3, above). Simpson, as

Table 4-2. Distribution of land grants

Parish	Year							
	1765	1766	1767	1768	1769	1770	1771	Total
St. George	3500	1900	2700	1000	80	912	1100	11,192
St. David	500	2900	2100	420		2300	500	8720
St. Andrew			2960	160		50		3170
St. Patrick		2596	2915			290		5801
St. Mary		2700	2300	352	855	1740	2500	10,447
St. Paul		800	2100	200	448	2550	1460	7558
St. John				2500	3800	1620	2600	10,520
Total	4000	11,096	14,975	4632	5183	9362	8160	57,408

After Young 1812c:81

the island's Chief Surveyor, possessed a degree of familiarity with the island beyond that of the other potential buyers. It appears that they recognized this advantage, following his lead in this second round of land sales (Archibald 1987:108).

By the third sale the buyers had further refined their estimates of the relative merits of the various parishes. In a trade-off that must have represented a difficult business decision on the part of the planters, purchases during the third sale were confined primarily to the nearly flat parishes of St. Andrew's and St. Patrick's. The planters were faced with two choices. On the one hand, St. Andrew's and particularly St. Patrick's Parishes offer few limitations to transport. Getting the crop from field to factory, and later getting the finished products--muscovado sugar, molasses and rum--from the factory to suitable points for shipment to overseas markets was greatly facilitated in the flatter parishes. On the other hand, the flat parishes suffered from a decided lack of surface water. In general, the streams and rivers of St. Patrick's and St. Andrew's were too small and too gently sloped to operate water-powered sugar mills. The lot choices of the third land sale indicate that early Tobago planters opted for ease of transport over the advantages of a water-based power supply. This is a particularly telling point in that

> ... (o)n the computation of our most intelligent planters, a `<u>water mill</u>' adds to the value of the

> Plantation one fifth, and one fifth more income from the proceeds of the crop, never being at a stand, or even retarded; from the Negroes never being employed in cutting canes, which eventually there may be no wind to grind, and the labours be lost as well as canes, from canes being taken off in their prime, and at the most seasonable and convenient moment, with a certainty of immediate manufacture, and generally from a saving of produce, time, and labour (Young 1812c:78--emphasis in original).

One consequence of the preference for land at the southwestern end of the island was the virtual abandonment of Georgetown. Although Plymouth was recognized as the best alternative choice, Scarborough was established as Tobago's capital city in 1767. According to Young (in Archibald 1987:115-117), the choice of Scarborough as the capital was a poor one, based more on individual influence than on the good of the colony as a whole.

> The prepondering influence of the Surveyor General, Mr. Simpson, then Speaker of the Assembly, prevented the selection of Plymouth Town; - where (as he is reported to have said) - ! that establishment of Government and trade would occasion a concourse of people to disturb his great plantation in the neighbourhood (ie. Courland Estate); his slaves would all be corrupted; the men in Tipplng Houses; and the women by sailors! The interests of the rich Leeward planters cooperating or temporizing with Mr. Simpson, the measure of removing the Sessions of Legislature from George Town, and the transferring it to Scarboro; was carried by personal influence and intrigue... (in Archibald 1987:116).

In the fourth land sale, buyers focused on St. John's Parish. Since this area was far removed from the newly established capital at Scarborough and from the preferred locale of St. Patrick's and St. Andrew's Parishes at the

southwestern end of the island, it seems likely that other factors accounted for this shift. By 1768, most of the coastal lands in more proximate relation to Scarborough had been claimed. Rather than choosing inland sites, where overland transport was difficult, buyers selected coastal lands where sea transport was possible. This pattern of purchasing land in St. John's Parish continued through the fifth round of land sales in 1769.

By the sixth land offering, in 1770, sales were more broadly distributed, concentrating in St. David's, St. Paul's, St. John's, and St. Mary's parishes. These may have been the more inland sites. The seventh and final land sale was held in 1771. Sales were concentrated in the eastern three parishes of St. John's, St. Mary's and St. Paul's parishes.

Table 4-3 documents the prices brought at the land sales by Parish. Although a brief glance at the table indicates that the most costly lands were located in St. John's and St. Paul's parishes, this does not necessarily reflect accurately the perceived value of lands. Rather, the table reflects the fact that the later a lot was sold, the better price it fetched. Table 4-4, showing costs per acre on a year-by-year basis, confirms this observation. Indeed, Young notes that:

> ...the price paid per acre (on a parish-by-parish basis) are (sic) no criterion of comparative value of the lands purchased. At commencement of the adventure the country was little known, and the

Table 4-3. Per acre cost of land grants by parish

Parish	Avg. cost per acre (£-s)
St. George	2-0
St. David	2-16
St. Andrew	2-2
St. Patrick	1-5
St. Mary	2-19
St. Paul	3-12
St. John	3-12

After Young 1812c:81

Table 4-4. Per acre costs of land grants, 1765-1771

Year	Avg. cost per acre (£-s)
1765	1-0
1766	1-0
1767	1-10
1768	1-10
1769	2-15
1770	5-17
1771	4-14

After Young 1812c:81

> bidders were cautious. In due course the soil was further examined and better known, it was more highly appreciated, and in the latter years a competition raised the price of interior lands (Young 1812c:81-82).

At the conclusion of the land sales, 57,408 acres had been sold for plantations, at a total cost of £154,058 (Young 1812c:81). Archibald (1987:123) notes that this represented 77 percent of all land on the island. When combined with the 1520 acres reserved for poor settlers and the 1000 acres reserved for crown usage, the resulting

59,928 acres (Table 4-5) account for nearly 81 percent of the island's total acreage. The remaining acreage was to be left in woods "for the preservation of the rains."

Table 4-5. Intended disposition of lands, 1765

Parish	Acres granted for Estates	Acres reserved for Poor Settlers	Total acres granted	Acres reserved for Crown
St. Andrew's	3170	450	3620	200
St. George's	11,192	120	11,312	100
St. Mary's	10,447	100	10,547	100
St. Paul's	7558	100	7658	100
St. John's	10,520	450	10,970	200
St. David's	8720	100	8820	200
St. Patrick's	5801	200	6001	100
TOTAL	57,408	1520	58,928	1000

Young 1812b:38

While the Tobago land sales were highly successful, putting the land into production was a different matter, requiring substantial clearing operations in Tobago's densely forested environment. While the data available on land clearing are sparse, they indicate that clearing occurred steadily, but unevenly, throughout the island. Table 4-6 documents clearing operations from 1771 to 1775. Table 4-7 breaks down clearing operations by parish for the years 1775, 1786 and 1811. The latter table shows that the amount of clearing in the rugged parishes at the eastern end of the island lagged far behind that of the others. By 1786, St. Andrew's Parish could begin to realize its productive potential while the eastern parishes continued to

lag behind. By 1811, St. Patrick's and St. David's parishes were also nearly completely cleared.

Table 4-6. Cleared lands, 1771-1775

Year	Acres cleared
1771	7042
1772	9601
1773	12,451
1774	15,060
1775	17,514

After Young 1812c:83

Table 4-7. Cleared lands by parish

	Acres cleared		
Parish	1775	1786	1811
St. Andrew	2338	2874	2910
St. George	4211	5837	6000
St. Mary	1906	3642	4218
St. Paul	1510	2595	4721
St. John	1320	2778	3570
St. David	2424	5106	8650
St. Patrick	2338	5083	5465
TOTAL	17,514	27,925	35,534

After Young 1812a:99, 1812c:89 and 92

The Tobago Economy

Tobago differed from all other ceded islands in that it still remained undeveloped in 1763. Where the other islands continued to produce the crops they previously had relied on, Tobago became a sugar colony from the first (Ragatz 1963:40-41). The adoption of sugar cane as the major crop was abetted by fiscal policies enacted by the British

government which, in the Mercantilist period, levied high taxes on Caribbean products other than sugar and rum (Nardin 1969:227). In 1770 the first shipment of sugar left Tobago for England (Archibald 1987:122),[2] ushering in a period of phenomenal growth for the island's sugar industry. The maturation of this industry was so rapid that in 1799 Tobago, though a relatively small island, exported more sugar (7,393 tons) than any other British Caribbean colony. The number of sugar mills on the island during various years gives a preliminary idea of the rapid development of the sugar industry (Table 4-8).

Table 4-8. Sugar mills, 1771-1775

Year	Water	Animal	Wind	Total
1771	2	18	9	29
1772	3	22	9	34
1773	6	29	15	50
1775	9	52	23	84

Nardin 1969:230

Sugar was not the only export of the colony during its initial years, however. Anxious to meet payments on their lands, needing to raise more capital, and believing that even with higher taxes the returns would be adequate, at least some Tobagonian planters cultivated crops that did not require additional expenditures for processing equipment

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[2] Nardin (1969:228) points out that this is the first official shipment by virtue of its transport directly to England. He notes that a shipment left Tobago in 1769 as well, but since it went to England via Barbados, it has not been noted by other researchers.

(Nardin 1969:227-228). Although not in large quantities, cotton was produced by 1773 (992 lbs.),[3] indigo by 1774 (3273 lbs.), and coffee by 1775 (591 lbs.) (Young 1809:57, 1812a:83). In 1776, pimento, cinnamon, ginger, and cloves were also produced (Lavaysse 1969 [1820]:348). These supplementary crops would more than prove their worth during subsequent years, when sugar production fell short of expectations.

1763-1781

Table 4-9 documents increasing sugar exports from 1771 to 1780. It is apparent that development did not proceed at a uniform pace.[4] During the early years of settlement, several events, of both a natural and political nature, impeded economic progress on the island. The first of these occurred between the years 1776 and 1780 with an infestation of "sugar ants." This natural plague coincided with the American revolution, which also dampened trade (Young 1812c:90). Sugar ants were first noted in Grenada in 1770 (John Castles, in Edwards 1819 vol. 1:397). Early in 1776,

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[3] All weights are given in US units (ie. one pound equals 16 ounces, one ton equals 2000 pounds).

[4] A variety of production and export figures for sugar are available in the literature. I have relied primarily on Deerr's (1949:202) export figures because they are the most extensive. Where Deerr does not present figures, I have relied on alternative sources. The reader is cautioned, however, to differentiate between production figures and export figures.

Table 4-9. Sugar exports, 1770-1780

Year	Sugar exports (tons)
1770	75
1771	198
1772	608
1773	632
1774	1,383
1775	1,551
1776	2,105
1777	614
1778	1,202
1779	696
1780	1,033

After Deerr 1949:202

however, swarms of them appeared on Tobago, first in St. George's and St. Mary's parishes, but spreading rapidly to all other parts of the island. The infestation ended abruptly in 1780, for unknown reasons.[5] By that time, however:

> The cultivation of other staples had superseded that of sugar and the lands and buildings for grinding the cane, and the boiling and granulation of its juice could not be suddenly reapplied to their ancient uses (Young 1812c:91).

During this period, and throughout the first 50 years of settlement, Tobagonian planters tended to switch emphasis from sugar to other crops during times of economic hardship. By far the most important of these crops was cotton. While only 42,548 lbs. were produced in 1775, two years later,

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[5] Castles believed that the ants on Grenada were wiped out by the rains and winds associated with the hurricane of 1770. It may be coincidence, but in October of 1780, the most violent storm of the 18th century effected Tobago (Tannehill 1944:145, 240).

after the ants had largely destroyed the cane crop (Table 4-9), a total of 1,693,800 lbs. of cotton were harvested (Young 1812c:89, 96).[6] In 1780, Tobago cotton comprised 35.4 percent of all Caribbean cotton imported into Britain (Nardin 1969:242). Cotton proved to be so successful on Tobago that significant amounts were produced at least through 1809 (Table 4-10).[7] Cotton was not the only fall-

Table 4-10. Cotton exports, 1794-1809

Year	Cotton Exports (lbs.)
1794	413,182
1795	297,409
1796	364,636
1797	66,955
1798	23,591
1799	7,227
1800	8,182
1801	28,182
1802	21,955
1803	24,000
1804	17,455
1805	32,182
1806	26,591
1807	25,500
1808	18,545
1809	31,227

After Woodcock 1866:appendix 1

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[6] Nardin (1969:233) disagrees with these figures, perhaps because he was relying on a different data-base. For the years 1774 through 1780 he gives cotton production figures of 96,500, 258,031, 574,800, 731,100, 1,644,600, 1,846,200, and 1,845,600 lbs. respectively.

[7] No records for cotton production are available after 1809, but it seems unlikely that production was halted after that date.

back crop however. Records indicate that indigo, ginger, dyewood and tumeric were also produced during this first period of declining sugar production between 1776 and 1780 (Nardin 1969:242; Young 1809:62, 1812a:96). To these crops can also probably be added coffee, pimento, cinnamon, and ginger, discussed above.

In contrast to production and export figures, census data show a steady increase in both the white and black populations during the earliest years of settlement (Table 4-11). Table 4-12 shows the same data broken down by

Table 4-11. Island population, 1770-1780

Year	White Population	Black Population
1770	238	3164
June 1771	250	4926
Sept. 1771	284	5124
1772	339	5921
May 1773	416	7396
Oct. 1773	431	7861
1774	367	7694
1775	391	8675
1780	474	10,701

After Nardin 1969:140

parish, and indicates that, as with clearing operations, the eastern parishes tended to lag behind the western ones in terms of the number of slaves on the estates. In addition, by 1773 the white population had already become concentrated in the town of Scarborough (St. Andrew's Parish), while by 1780 Plymouth (St. Patrick's Parish) had a fairly large

Table 4-12. Island population by parish, 1770-1780

	1770		6/1771		1772		5/1773		10/1773		1775		1780	
Parish	W	B	W	B	W	B	W	B	W	B	W	B	W	B
St. Andrew	28	435	34	743	61	847	122	1130	115	1226	113	1264	126	1515
St. David	21	371	34	716	43	787	53	979	56	1026	41	1081	62	1737
St. George	44	710	48	997	71	1202	65	1347	68	1406	70	1591	79	1772
St. John	14	154	17	202	16	168	28	532	28	532	35	769	30	796
St. Mary	51	592	38	834	52	984	44	1058	44	992	32	971	38	1017
St. Patrick	53	624	63	1053	72	1438	64	1522	70	1744	70	2192	96	2741
St. Paul	15	278	16	381	24	495	40	828	50	935	30	797	43	1123
TOTAL	226	3164	250	4926	339	5921	416	7396	431	7861	391	8665	474	10,701

After Nardin 1969:138

white population as well. Trends become more apparent through examination of Table 4-13, which shows that by 1780, parity in population between parishes, including both white and black inhabitants, was being approached.

1781-1793

The recovery of the sugar industry from the ant infestation was dramatically slowed by the first of two French occupations of the island. From 1781 to 1793 political control of the island was in the hands of the French, although Tobago's population and culture remained essentially British (Woodcock 1866:55-58). This was a period of difficulty for the planters. With the French in control, loans and other funds were not forthcoming from the sources traditionally available to the British planters. As a result, the repairs to the sugar works necessitated by the forced shut-down during the ant infestation could not be made (Young 1812c:93-95). During the French tenure, many sugar works remained idle.

The planters' problems were further increased by the occurrence of the French and Haitian revolutions during this period. The French government had far too much on its hands to worry about a small colony composed primarily of people loyal to a foreign government. Its response was to leave Tobago to its own devices. The first French occupation of Tobago was characterized by a period of self-government and

Table 4-13. Population statistics, 1780

PARISH	Area (km^2)	Density per km^2 (Whites)	Density per km^2 (Blacks)	Ratio of Blacks to Whites	White Growth Index (since 1770)	Black Growth Index (since 1770)
St. Andrew's	13	9.7	116	12.0	450%	348%
St. David's	35	1.8	50	28.0	295%	468%
St. George's	45	1.7	39	22.5	180%	249%
St. John's	42	0.7	19	26.6	215%	517%
St. Mary's	41	0.9	25	27.0	75%	173%
St. Patrick's	23	4.1	119	28.5	180%	439%
St. Paul's	31	1.4	36	26.5	285%	404%

After Nardin 1969:139

self-protection (Young 1812c:95). At least once during this period, near anarchy reigned. In 1791, in a demonstration of support for the revolutionary movement in France, the garrison at Fort King George (called Fort Castries by the French) rioted. The soldiers burned the capitol town of Scarborough (renamed Port Louis during the French tenure) almost completely, leaving only the taverns "which the drunkards had reserved, probably for their carousals" (Young 1812c:96).

The economy of Tobago suffered as a result of the French disinterest. Not only was there a marked decline in sugar production (Table 4-14), but production of all supplementary crops decreased as well. Young (1812c:95, 101) notes that indigo exports dropped from 25,000 lbs. in 1780, the year before the French took the island, to 10,909 lbs. in 1786, to 3965 lbs. in 1788 and to 3636 lbs. in 1789. The decline of cotton was less pronounced (Table 4-14), and it remained the principal export throughout the first French occupation (Young 1812c:93-95), much of it probably being

Table 4-14. Sugar and cotton production, 1785-1789

Year	Sugar (tons)	Cotton (lbs)
1785	9,329	32,182
1786	9,158	26,599
1787	9,042	25,500
1788	7,844	18,545
1789	8,118	31,227

After Young 1812a:206

exported to Britain (Ragatz 1963:200, 201). Table 4-15 shows the principal products grown on estates during this period, while Table 4-16 shows land-use patterns. These data indicate that while cotton production was spread relatively evenly about the island, sugar was produced primarily in St. Patrick's and St. David's Parishes. Indigo, on the other hand, was produced almost entirely in St. Paul's Parish, on a single estate.

Finally, the difficulties engendered by French rule were compounded by a major hurricane which struck Tobago in August of 1790 (Tannehill 1944:146-147). While the destruction caused by this event is not well documented, it did destroy 20 vessels and the estate house and sugar works at Riseland Estate (Woodcock 1866:60-61). A more accurate picture of the destruction is given by an elderly person to whom Woodcock spoke in person some seventy years after the fact. She described the 1790 event as being of the same magnitude as the hurricane of 1847 (discussed below) (Woodcock 1866:60).

Trends with positive economic consequences were apparent during this period as well. In particular, there was a decreased reliance on traction animals as sugar mill power sources. Table 4-17 shows a significant decrease in the number of cattle mills on the island when compared to 1775, while also showing an increase in wind and water powered mills (see Table 4-8). Since there was also a

Table 4-15. Estates producing sugar, cotton and indigo by parish, 1786

Estates in:	St. Andrew	St. George	St. Mary	St. Paul	St. John	St. David	St. Patrick	TOTAL
Sugar	4	5	1	5	3	9	8	35
Cotton	17	21	11	13	14	22	15	113
Indigo	0	1	0	1	0	0	0	2

After Young 1812c:92

Table 4-16. Crop distribution by parish, 1786

Acres in:	St. Andrew	St. George	St. Mary	St. Paul	St. John	St. David	St. Patrick	TOTAL
Sugar	126	317	150	626	321	1112	986	3458
Indigo	0	1	0	46	0	0	0	47
Coffee	0	1	0	1	0	1	0	3
Cocoa	0	0	0	0	0	1	0	1
Cotton	1611	2995	2048	846	1502	2711	2830	14,579
Provision	467	777	321	435	428	744	629	3769
Pasture	670	1746	1123	641	527	537	638	5882
Forest	266	5196	4418	3889	6812	3601	662	24,844
TOTAL	3,140	11,033	8,060	6,484	9,590	8,707	5,745	49,125

After Young 1812c:92

Table 4-17. Sugar mills, 1786

Parish	Water	Animal	Wind	TOTAL
St. George	4	4	0	8
St. Mary	0	1	1	2
St. Paul	5	2	0	7
St. John	0	2	1	3
St. Patrick	0	9	15	24
St. David	1	5	6	12
St. Andrew	0	3	7	10
TOTAL	10	26	30	66

After Young 1812c:92

significant decrease in the total number of mills, it seems probable that estates relying on wind or water powered mills were more likely to remain in production.

Population figures for 1786 show that many of the trends noted for the preceding period (1763-1781) continued (Tables 4-18 and 4-19). By this time the ratio of whites to slaves had become even further skewed in favor of the slaves, indicating the full maturation of Tobago as a plantation society.[8] These figures also give the first intimation of a developing free colored population. As one

[8] Table 4-18 also shows a decline in the number of whites on the island when compared to the 1780 figure (Table 4-12). This may indicate the concentration of acreage into fewer hands.

Table 4-18. Island population by parish, 1786

Parish	Whites	Free Colored	Slaves
St. George	51	21	1950
St. Mary	21	9	1135
St. Paul	30	9	1151
St. John	40	14	1297
St. Patrick	50	9	2662
St. David	71	16	2434
St. Andrew	141	72	2049
TOTAL	437	149	11,638

After Young 1812c:92

Table 4-19. Population densities and ratio, 1786

Parish	Density per km^2 (Whites)	Density per km^2 (Slaves)	Ratio of whites to slaves
St. George	1.1	43	38.2
St. Mary	0.5	28	54.0
St. Paul	1.0	37	38.4
St. John	0.9	31	32.4
St. Patrick	2.2	116	53.2
St. David	2.0	69	34.3
St. Andrew	10.8	158	14.5

After Young 1812c:92

would expect, they were primarily concentrated in Scarborough. Few chose to locate in Plymouth, indicating its decreasing importance as a significant economic base of operations.

1794-1800

In April of 1793 Tobago was retaken by the British by force of arms. Sugar soon returned to its pre-eminent position as the staple export (Table 4-20).[9] At the same time, cotton exports drastically declined, and cotton production was nearly phased out by 1800. Given the success that Tobagonian planters had with cotton, and the high esteem with which it was held by the proprietors of Manchester's cotton mills (Lavaysse, in Nardin 1969:234), it is difficult to understand why cotton was so readily and rapidly abandoned. The major contributing factor was the increasing availability of cotton from other sources, particularly the United States, which paid significantly lower duties on cotton at the close of the eighteenth century than did competing British Caribbean colonies (Carrington 1987:159; Ragatz 1963:370-371). In addition, cotton and sugar were harvested in the same months. Thus, competing timetables made them mutually exclusive (Turnbull, in Nardin 1969:235).

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[9] No data is available for the years between 1789 and 1794.

Table 4-20. Volume of exports, 1794-1800

Year	Sugar (tons)	Cotton (lbs.)
1794	4,733	413,181
1795	3,465	297,409
1796	4,358	364,636
1797	4,429	66,954
1798	5,787	23,590
1799	7,939	7,227
1800	5,983	8,181

After Deerr 1949:202; Woodcock 1866:appendix 1

From 1794 to 1801, Tobago's sugar exports rose from 4,733 tons to 6,626 tons. These were the golden years of the Tobago plantation era, for it was during this period that the island reached its highest sugar output. Much of the success of the Tobagonian planters can be attributed to the near total destruction of the Haitian economy during the revolution there. "The sudden withdrawal of (Haiti's) immense supplies of tropical produce from the general European market occasioned widespread scarcity; continental buyers hastily turned across the English Channel to fill their needs" (Ragatz 1963:205). As a result, the price fetched by sugar in the British market rose rapidly. From 1795 until the end of the century, the price of sugar on the British market never fell below 50s. per cwt exclusive of duties (Ragatz 1963:205). Table 4-21 gives an idea of the

Table 4-21. Income of an idealized estate producing 150 Hhds. (99 tons) of sugar with 200 slaves

Year	Export duty /cwt.*	Merchant charges/cwt.	Net value /cwt.	Net value /Hhd.**	Net income
	£-s	£-s	£-s	£-s	£-s
1796	0-71	0-22	0-49	31-17	4777-10
1797	0-65	0-22	0-43	27-19	4187-0
1798	0-68	0-22	0-46	29-18	4485-0
Average	0-68	0-22	0-46	29-18	4485-0

* One cwt.=102 lbs.
** One Hhd.=13 cwts. or 1324 lbs.
After Young 1812c:121

kinds of profits achievable by Tobagonian sugar planters during this period.[10]

[10] Even during times of peak sugar production cotton was never completely abandoned (see Table 4-10). Despite documentary emphasis on sugar production, Tobago cannot be characterized by monocropping.

CHAPTER 5
DECLINING FORTUNES

Throughout the first decade of the nineteenth century sugar prices tumbled. Several factors combined to drive the price of sugar down until, by 1807, the per unit cost of production was greater than the market price (Ragatz 1963). The foremost cause was renewed access to non-British markets by non-British producers. In the last decade of the eighteenth century, the British colonies were the primary suppliers of tropical products to all of Europe. Sugar and other products were exported to Britain from the Caribbean, and then re-exported to the continent to meet foreign demand. As a result, prices for sugar were artificially high. By the early nineteenth century, foreign production was again reaching the continental market. The increased competition caused declining sugar prices. The situation was further exacerbated by increased production. In short, what had been a sellers' market rapidly changed into a buyers' market, hurting planters across the board. Table 5-1 shows the effect of this decline on the Tobagonian planters by 1805 (compare with Table 4-21). Of particular note, the net profit derived from one hogshead of sugar dropped from a high of £31.17 in 1796 to a low of £1.19 in

Table 5-1. Income of an idealized estate producing 150 Hhds. (99 tons) of sugar with 200 slaves, 1796-1807

Year	Export duty /cwt.	Merchant charges/cwt.	Net value /cwt.	Net value /Hhd.	Net income
	£-s	£-s	£-s	£-s	£-s
1805	0-43	0-28	0-15	9-15	1450-0
1806	0-31	0-28	0-3	1-19	292-10
1807	0-33	0-28	0-7	4-1	607-10
Average	0-36	0-28	0-8	5-7	780-0

After Young 1812c:121

1806, a staggering 96 percent decline. By 1807, only 30,537 acres remained in sugar cane on Tobago (Young, in Ragatz 1963:308).

From 1807 onwards, there was a continual struggle on the part of Tobagonian planters to save their way of life. Under constant pressure from declining prices, they suffered a gradual reversal of their fortunes. The island went from being a jewel in the crown of England to being a colonial backwater contributing little to the British economy. The primary events affecting Tobago during this period were the abolition of the slave trade in 1807, the advent of apprenticeship in 1834, the emancipation of the slaves in 1838, and the passage of the Encumbered Estates Act of 1854. Table 5-2 shows the estates in cultivation throughout Tobago for the years 1811, 1824, 1832, and 1862.

Table 5-2. Sugar estates in cultivation for various years

Estate	Parish	In cultivation:			
		1811	1824	1832	1862
Adelphi	St. George's	XX	XX	XX	
Adventure	St. David's	XX	XX	XX	XX
Amity Hope	St. David's	XX	XX	XX	
Argyle	St. Paul's	XX	XX	XX	
Arnos Vale	St. David's	XX	XX	XX	XX
Auchenskeoch	St. Andrew's	XX	XX	XX	XX
Bacolet	St. George's	XX	XX	XX	XX
Belle Garden	St. Paul's	XX	XX	XX	XX
Belmont	St. George's	XX	XX	XX	XX
Betsey's Hope	St. Paul's	XX	XX	XX	XX
Bon Accord	St. Patrick's	XX	XX	XX	XX

Table 5-2 (cntd.).

Estate	Parish	In cultivation:			
		1811	1824	1832	1862
Buccoo	St. Patrick's	XX	XX	XX	XX
Burleigh Castle	St. Andrew's	XX	XX	XX	XX
Calder Hall	St. Andrew's	XX	XX	XX	XX
Campbellton	St. John's	XX			
Cardiff	St. Mary's	XX			
Carnbee	St. Andrew's	XX	XX	XX	XX
Castara	St. John's	XX	XX	XX	XX
Cinnamon Hill	St. George's	XX	XX		
Charlotteville	St. John's	XX	XX	XX	XX
Concordia	St. George's	XX	XX	XX	XX
Courland	St. David's	XX	XX	XX	XX
Cove	St. Patrick's	XX	XX		
Cradley	St. George's	XX	XX	XX	XX
Craig Hall	St. David's	XX	XX	XX	XX
Cromstane	St. Patrick's	XX			
Culloden	St. David's	XX	XX	XX	XX
Delaford	St. Paul's	XX	XX		
Dunvegan	St. David's	XX	XX	XX	XX
Franklyns	St. David's	XX	XX	XX	XX
Friendsfield	St. George's	XX	XX	XX	XX
Friendship	St. George's	XX			
Friendship	St. Patrick's	XX	XX	XX	
Glamorgan	St. Mary's	XX	XX	XX	XX
Golden Grove	St. Patrick's	XX		XX	XX
Golden Lane	St. David's	XX	XX	XX	XX
Goldsborough	St. Mary's	XX	XX	XX	XX
Goodwood	St. Mary's	XX			
Grafton	St. Patrick's	XX	XX	XX	XX
Grange	St. Patrick's	XX	XX	XX	XX
Greenhill	St. George's	XX	XX	XX	XX
Hampden	St. Andrew's	XX	XX	XX	

Table 5-2 (cntd.).

Estate	Parish	In cultivation:			
		1811	1824	1832	1862
Hermitage	St. John's	XX	XX	XX	XX
Highlands	St. David's		XX	XX	XX
Hope	St. George's	XX	XX	XX	XX
Indian Walk	St. David's	XX	XX	XX	XX
Invera	St. Paul's		XX	XX	XX
Inverarden	St. Mary's	XX			
Kendal Place	St. Paul's	XX	XX	XX	XX
Kilgwyn	St. Patrick's	XX	XX	XX	XX
King's Bay	St. Paul's	XX	XX	XX	XX
Lambeau	St. Andrew's	XX	XX	XX	XX
Les Coteaux	St. David's	XX	XX	XX	XX
Lower Quarter	St. David's	XX	XX	XX	XX
Lowlands	St. Andrew's	XX	XX	XX	XX
Lucy Vale	St. John's	XX	XX		
Lure	St. Mary's	XX	XX	XX	XX
Mary's Hill	St. David's	XX	XX	XX	XX
Merchiston	St. Paul's	XX	XX	XX	
Montpelier	St. Andrew's	XX	XX	XX	XX
Mt. Dillon	St. David's	XX	XX	XX	XX
Mt. Irvine	St. Patrick's	XX	XX	XX	XX
Mt. St. George	St. George's	XX	XX	XX	XX
New Grange	St. Patrick's	XX	XX	XX	XX
Nutmeg Grove	St. George's	XX	XX	XX	XX
Orange Hill	St. David's	XX		XX	XX
Orange Valley	St. Patrick's	XX	XX	XX	
Pembroke	St. Mary's	XX	XX	XX	XX
Prospect	St. Patrick's	XX	XX	XX	XX
Providence	St. David's	XX	XX	XX	XX
Richmond	St. Mary's	XX		XX	XX
Riseland	St. Andrew's	XX	XX	XX	XX
Roxborough	St. Paul's	XX	XX	XX	XX

Table 5-2 (cntd.).

Estate	Parish	In cultivation: 1811	1824	1832	1862
Runnemede	St. David's	XX		XX	XX
Shervan	St. Patrick's	XX	XX	XX	XX
Sherwood Park	St. Andrew's	XX	XX	XX	XX
Smithfield	Unknown				XX
Speyside	St. John's	XX	XX	XX	XX
Spring Garden	St. Andrew's		XX	XX	
Studley Park	St. George's	XX	XX	XX	XX
Telescope	St. John's	XX	XX	XX	
Trois Rivieres	St. John's			XX	
Unity	St. Mary's	XX		XX	XX
Whim	St. David's	XX		XX	XX
Woodlands	St. David's	XX		XX	XX
TOTAL		80	70	74	65

After Ottley 1950:142-144; Woodcock 1866:appendix 10; Young 1812a:71-95.

1800-1807

Declining revenues and the abolition movement affected planters throughout the British Caribbean. Though this is not reflected in the production or export figures, as business men the Tobagonian planters would have been keenly aware that sugar prices were dropping, that their political power in Britain was in decline and that their labor force might be removed from their control in the future. Following so quickly on the heels of the boom years of the 1790s, it is unlikely that these realizations did more than create a background of stress in the minds of the

planters, particularly given the other events occurring on Tobago.

The Tobago slaves may have perceived the trend towards abolition and eventual emancipation as well. In 1801 they planned an insurrection, the first on the island since the very earliest years of settlement. Set for Christmas eve, the plan was to set fire to canes near each estate house. When the planters came to fight the fires they were to be put to death along with the slaves who remained loyal to them. In short, the system of slavery on Tobago was to be overthrown and replaced by an Afro-tobagonian government (Woodcock 1866:72-73).[1]

Fortunately for the Tobago planters, and unfortunately for their slaves, the 1801 insurrection was discovered before it had even begun. Thirty ringleaders were caught, incarcerated and sentenced to death. At the order of General Carmichael, commander of the Tobago military garrison, only one slave was actually hung, however. To give the impression of a thorough reprisal, his body was hoisted up the flag staff at Fort King George 30 times, with

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[1] As discussed earlier (Chapter 4) three revolts occurred in 1770 and 1771. While it is likely that others were planned during the intervening years, apparently none went beyond the planning stages or came to the attention of the authorities. Genovese (1979:3) has argued that early revolts were "restorationist"--designed to secure freedom from slavery for the participants. Later revolts are characterize as revolutionary attempts to overthrow the system of slavery (see also Gaspar 1985:255-258). The 1801 revolt on Tobago certainly falls into this latter category.

a signal gun at each hoist. Believing that all of their leaders were dead, the revolutionary tendencies of the mass of slaves were shattered.[2]

In 1802, by the Treaty of Amiens, Tobago again reverted to French control, only to be recaptured by the British in 1803 (Ottley 1950:49). From a cultural perspective, little significance can be attached to this event as it was of such short duration. In addition, during the French tenure, British law and the rights of Tobagonians accorded by that law were maintained. The Tobago legislature was so grateful that it voted a bonus of £4000 to the French-appointed governor above and beyond his £3300 salary, the same salary as that afforded to British governors (Woodcock 1866:54).

The same cannot be said of the economic circumstances of the Tobagonian planters during and immediately following the French occupation. Several factors contributed to a declining economy. First, with the advent of French rule, exports to Britain, or to any other country but France, were immediately banned by the new government (Ottley 1950:49). Table 5-3 shows a sharp decline in sugar exports in 1803, reflecting the consequences of this ban. Although exports rose back to their customary level after the British

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[2] Carmichael's move was interpreted as magnanimous at the time and has been cited as an example of the generally good relations which existed between blacks and whites on Tobago (Woodcock 1866). A more cynical interpreter might wonder what became of the revenues from the selling off-island of 29 slaves.

Table 5-3. Sugar exports, 1800-1809

Year	Sugar (tons)
1800	5,983
1801	6,626
1802	7,724
1803	4,706
1804	6,394
1805	7,680
1806	7,412
1807	6,046
1808	6,278
1809	6,456

After Deerr 1949:202

recapture of Tobago, uncertainty about the future status of the island prompted the passage of "the Limitation Act" by the British parliament in 1805, limiting economic aid to all West Indian islands ceded to the French by the Treaty of Amiens. This hardly reassured the Tobagonian planters and had the added detrimental effect of "induc[ing] creditors to sue and mortgagers to foreclose" (Young 1812c:119). As a result, there was an exodus of planters from the island (Young 1812c:121), and a brief upsurge of cotton production, which nearly doubled from 17,454 lbs. in 1804 to 32,182 lbs. in 1805 (Woodcock 1866:appendix 1).

Abolition and Amelioration

In 1807, the British parliament enacted the Abolition Act, making the importation of African slaves into the

colonies illegal. This was a devastating blow to Tobago's planter class. Up until abolition, planters had been guaranteed a constant supply of labor in the form of steady slave importation. In the labor intensive environment of a sugar plantation, slaves were thought to be a necessity. Their work was arduous and because of the nature of cane cultivation and sugar production, for much of the year nearly constant. This took a heavy toll on the labor force, to such an extent that most plantation slave populations in the Caribbean were non-reproducing. That is to say, the death-rate exceeded the birth-rate, so that the slave population could not be maintained without importation of fresh slaves from a foreign source. The planters problems were aggravated by the War of 1812 which brought about a decline in access to foreign produced provisions (Ragatz 1963:343-344). While this affected the food supply of the entire population of Tobago, the slaves were by far the hardest hit.

In response to the abolition of the slave trade, and to some extent preempting the adverse effect of the war, the Tobagonian planters took steps to increase the general health, and thus the birth-rate, of their slaves. From a sugar production perspective, perhaps the most significant of these steps was the initiation of an Agricultural Society in 1807 to increase self-sufficiency and slave nutrition. Although the society was short-lived, by 1808 triple the

acreage on estates was given over to provisions (Young 1812a:no page number, and in Ragatz 1963:325). As a result, sugar production declined from 9,741 tons in 1807 (Young 1809:98) to 7,602 tons in 1811 (Young 1812a:99).

Table 5-4 shows that the planter's ameliorative efforts had little beneficial effect on the slave population. In four years, despite the efforts of the planters, the overall decrease in the slave population was 362. In only one parish, St. Patrick's, was there an increase, and only of three slaves. One cause of the decrease is apparent through examination of the Special Returns of 1811 (Table 5-4)--in all parishes, except St. Patrick's, males outnumber females. By 1824 the decrease brought about by abolition was even more marked. Census data given by Ottley for that year (1950:142-144) show only 10,632 slaves on Tobago's estates, a decrease of nearly 17 percent since 1811.

A particularly bad year for Tobagonian planters occurred in 1827, when only 2,739 tons of sugar were exported (Table 5-5). None of the various histories of the island account for such a miserable year. A similar decline, though of a lesser magnitude, occurred on many other Caribbean islands (Deerr 1949). On most, it can be accounted for by crop destruction accompanying a major hurricane that affected all of the Leeward Island group (Ragatz 1963:375; Tannehill 1944:150-151).

Table 5-4. Change in slave population, 1808-1811

	October Polls				Special returns of 1811			In last three years		
Parish	1808	1809	1810	1811	Male	Female	Child	Births	Deaths	Decrease
St. Andrew's	2184	2200	2238	2120	832	758	530	168	170	2
St. George's	1966	1947	1921	1966	810	737	419	125	208	83
St. Mary's	998	983	950	944	369	362	213	55	104	49
St. Paul's	1523	1464	1566	1579	643	616	320	89	203	114
St. John's	1454	1436	1418	1448	580	554	314	69	80	11
St. David's	3862	3917	3968	4024	1537	1518	969	325	400	75
St. Patrick's	8119	3137	3082	3058	1120	1186	752	310	307	-3
Attached	15,106	15,084	15,143	15,139	5891	5731	3517	1141	1471	330
Unattached	2180	1850	1657	1532	540	609	383	92	124	32
TOTAL	17,286	16,934	16,800	16,671	6431	6340	3900	1233	1595	362

Young 1812a:113

Table 5-5. Sugar exports from Tobago, 1814-1869, 1872-1888 and 1890-1891

Year	Sugar (tons)
1814	5,383
1815	5,397
1816	6,213
1817	6,179
1818	5,042
1819	5,911
1820	5,321
1821	4,833
1822	5,390
1823	5,045
1824	5,530
1825	4,971
1826	5,384
1827	2,739
1828	5,471
1829	4,047
1830	4,173
1831	5,413
1832	4,827
1833	3,863
1834	3,528
1835	3,450
1836	5,253
1837	4,054
1838	3,198
1839	4,144
1840	2,301
1841	2,150
1842	2,094
1843	2,046
1844	2,201
1845	2,844
1846	1,733

Figure 5-5 (cntd.).

Year	Sugar (tons)
1847	3,538
1848	2,388
1849	2,290
1850	1,978
1851	2,283
1852	3,052
1853	2,587
1854	1,983
1855	1,756
1856	2,616
1857	1,525
1858	3,031
1859	2,634
1860	2,299
1861	2,471
1862	3,228
1863	2,122
1864	1,981
1865	2,353
1866	4,035
1867	3,192
1868	2,084
1869	2,641
1872	3,468
1873	3,630
1874	3,882
1875	4,603
1876	3,394
1877	2,924
1878	2,832
1879	2,896
1880	2,970
1881	3,240
1882	2,249
1883	2,270

Figure 5-5 (cntd.).

Year	Sugar (tons)
1884	3,361
1885	2,319
1886	594
1887	2,178
1888	2,012
1890	1,008
1891	1,189

After Deerr 1949:202

Apprenticeship

The period between the instituting of apprenticeship in 1834 and the granting of full emancipation to the slaves on the first of August 1838 was a difficult one for all Caribbean planters. Apprenticeship marked the end of the old plantation regime based on slave labor, and instituted a new regime characterized by a system of labor that was partially coerced and partially remunerated. On Tobago, apprentices were required to work a 45 hour week for the planters (Ragatz 1963). In recompense, they would receive a wage or a wage and access to housing and provision grounds. For general labor the wage was set at approximately 1s. per day or 8d. per day plus house and grounds; for drivers the wage was double that or more; and for artisans (coopers, smiths, etc.) the wage was 1s. 6d. to 2s. per day plus house and grounds (CO285/42:342). Table 5-6 enumerates this pay scale for 1836.

Table 5-6. Per diem pay scale for apprentice labor, 1836

Position	Pay (£-s)
Head driver	1-8
Head boilerman	1-8
Mill boatswain	1-8
Mill feeder	1-0
Bagas haulers	0-16
Cane carriers	0-16
Bagas carriers	0-12
Fire men	1-0
Stiller women	0-12
Cart men	1-0
Cart leaders	0-8
Bagas handlers	0-8
Second boilers	1-0

After CO285/42:359

Many islands experienced labor problems associated with apprenticeship. Although contemporary documents state that this was not generally the case on Tobago (CO285/42:361), exceptions did occur. On Adelphi Estate in October, 1835, for example, 21 individuals were punished on one occasion for not coming to work, while on another occasion 33 individuals were punished for not having done enough work (CO285/42:327).[3] These numbers are all the more astonishing when one considers that Adelphi Estate employed only 57 apprentices. Thus, while labor problems were not

[3] It should be noted that two individuals, one of whom was responsible for these punishments, had more complaints about them brought to the attention of the Governor during this period than all other estate managers combined (CO285/42:327).

considered to be widespread by the Tobagonian planters, it appears that at least some apprentices felt it necessary to strike for better treatment.

Rather than labor problems, reductions in Tobago's sugar exports during the apprenticeship period were attributed by the planters to natural and local causes. Specifically, several periods of drought commenced in 1834, not ending until 1843 (Niddrie 1961:18). In St. Paul's Parish, the change in production from 1834 to 1835 amounted to as much as a 50 percent drop at one estate, while the average decrease was about 3 percent (Table 5-7).

It is likely that the apprentices were more adversely affected by the drought than were the planters. Indeed, the drought may have helped the planters obtain labor because production in the provision grounds would have been more difficult and apprentices would have had to rely more on wages to secure food (Hall 1971:30). Thus, the predictability of labor, particularly during the harvest, would have been greatly increased.

Emancipation

On August 1, 1838, all former slaves on Tobago were given their freedom. While a great deal of thought had been devoted to the effects this event would bring about, little actual preparation had occurred. The great fear was that manumitted slaves would immediately desert the plantations

Table 5-7. Change in sugar production during first year of apprenticeship, St. Paul's Parish

Estate	Percent change
Belle Garden	20
Richmond	20
Speyside	10
Trois Rivieres	10
Kendall	5.5
Roxborough	4
Lure	1
King's Bay	0
Invera	0
Betsey's Hope	0
Pembroke	-50
Glamorgan	-33
Merchiston	-30
Goldsborough	-1
Telescope	-1
Hermitage	-1
AVERAGE	-3

After CO285/42:361

to pursue a peasant livelihood, particularly during harvest time when the labor requirements of sugar production were at their highest (Green 1976:194). One solution would have been to diversify. Pimento was produced in abundance on Tobago at the time of emancipation, while the cinnamon and nutmeg industries were revived (CO285/42:254-256). Unfortunately, by this time profits from sugar were so reduced as to virtually preclude experimentation in any other crop--there was no spare cash to fall back on should experimentation fail. Governor Lionel Smith expressed the prevailing opinion when he said "no other pursuit may

promise such a profitable return for labor, nor will any other, I am afraid, be attempted under the persons representing property, nor until sugar fails" (CO285/42:256).

Rather than experiment, the Tobagonian planters preferred to re-invest what surplus funds they had in infrastructural improvements for sugar production. Shortly after emancipation, the Tobagonian planters received a total of £335,627 as remuneration for their freed slaves (Ottley 1950:72). Using this money and whatever else was available to them, at least some Tobagonian planters upgraded their milling equipment. Eubanks (1992:201) argues, for example, that in at least one case an older, less efficient vertical-roller crushing mill was replaced with a horizontal model of greater efficiency.

This began a process of intensification whereby planters would attempt to make up for the loss of labor through more efficient processing techniques. By 1849, of 63 estates producing sugar on the island, 23 used steam engines to drive the mills, a significant increase since the early nineteenth century when only two steam-driven mills were in operation. In addition, there were 22 water-driven mills, 13 wind-driven mills, and only five animal-driven mills (Davy 1971 [1854]:259). Though it is likely that other modifications were attempted at this time as well, particularly to the boiling trains, there is no indication

that the new boiling technologies then available were introduced to Tobago. Rather, it appears as though the major production-enhancement efforts were aimed at increasing juice-yield per cane, possibly because the new technologies were more prone to break-down or because the laborers were not considered competent to run and maintain the more sophisticated equipment.

Despite the ongoing drought which continued to bring at least some relief from labor problems, the planters' other fears were realized: "Since the period of freedom in August 1838, a number of laborers have quitted estates and are either occupying land on rent or as leaseholders or as freeholders" (Dowland 1843-1848:21). In the first three months of freedom, up to 600 laborers left the estates to take up residence in small hamlets scattered about the island (Niddrie 1961:43). The exodus continued in the following years so that by 1846 there had occurred a "rapid spread of independent settlement throughout the island" (Governor Reid, in Niddrie 1961:44). Sugar production in the years following emancipation was at a generally lower level than it had been as a result (Table 5-5). This trend did not really become apparent until 1840, however, perhaps indicating some lag time between emancipation and estate desertion for the bulk of the former slaves. If so, it seems possible that this hiatus could have been an adjustment period during which laborers laid the groundwork

for their flight, amassing funds from whatever sources were available to them, getting building materials together and selecting lands on which they could settle.

Unlike on many other islands the tendency to "squat" on estate or crown lands was minimal on Tobago (Niddrie 1961:43). Rather, freed slaves preferred to buy or lease marginal estate lands where they were made available. Indeed, making these lands available was probably a good decision on the part of the individual planters, since it at least assured them of a potential labor supply close-by.

Despite the labor shortages associated with emancipation and the substantial decrease in sugar exports that occurred as a result (Table 5-5), the period immediately following emancipation was one of amicability between freed slaves and estate owners (Woodcock 1866:87-88).

Metayage

By 1843, continuing labor shortages and drought so reduced the ability of the Tobagonian planters to produce sugar that a system of metayage, or labor sharing, was introduced. Though its success is not readily apparent in export figures for the following year (Table 5-5), its advantages were apparently recognized, for it was permanently established in 1845 (Niddrie 1961:18). In that year, sugar exports rose to 2,844 tons, the highest they had

been since 1839. In the unofficial agreements that constituted the metayage system, a worker was responsible for all agricultural operations on a given cane piece, including clearing, planting and harvesting. That worker could then enter into agreements with other workers, either for a share of the sugar or in exchange for labor, to fulfill those tasks. In payment for the labor, the worker was allowed to keep half the sugar manufactured. The estate owner kept the other half in compensation for capital inputs--he or she owned the land, the carts in which the cane was hauled to the mill, the stock, and the mill itself, and was also responsible for paying specialist workers in the mill (the boilerman, the foreman, and one fireman). In addition, the worker was allowed to keep a bottle of rum for every barrel of sugar produced, provided that all the molasses was used in rum production (Ottley 1950:74-76). By 1857, one-third of the sugar produced on Tobago was generated under the metayage system (Phillips n.d.:Chapter 26). A version of the metayage system was in operation on Tobago until the 1940s, when the last of the estates abandoned sugar production.

Hall (1959) argues that the year 1846 was pivotal for British planters in the Caribbean. In that year parliament passed the Sugar Duties Act which effectively ended the protectionism that had characterized British Caribbean sugar production throughout its history. The economic, social and

political consequences of this act have not been documented for Tobago, but on Jamaica there was a predictable decrease in the profits available from sugar production (Hall 1959:43). This same decrease was no doubt felt by Tobago planters as well. The unexpectedly low Tobago export figure for 1846 (Table 5-5) may reflect an immediate and short term reaction by Tobago planters. The historical record provides no information on an environmental perturbation that can otherwise account for such a dismal export figure, particularly following the high figure for 1845 and preceding the even higher figure for 1847. Such and event cannot be ruled out, however.

The immediate problems facing the Tobagonian planters were aggravated on a vast scale by the hurricane of 1847, which struck the island on the night of October 11 (Woodcock 1866:107). The destruction it wrought was amplified by the complacency of Tobago's inhabitants. On most other Caribbean islands, the approach of a storm of such magnitude would have been recognized before its actual arrival. Forewarned, residents would have done what they could to prepare. Tobago, however, was thought to be too southerly to be in the path of hurricanes, and what warnings the island inhabitants had went unheeded.

John Davy visited Tobago nine months after the hurricane. Since descriptions of the hurricane are scarce in the literature, I include his description in full:

Eighteen persons were killed by buildings falling on them; a large number were wounded, of whom eighteen died. The greater number of the houses throughout the island were more or less damaged. Many of them, and some of the most substantial, were levelled with the ground. The devastation effected in the native forests was great; stripped of their leaves, they presented, as described by an eye witness, a most unnatural wintry appearance, --and great was the damage done to the cocoa nut trees, and the cane crop, at the time approaching maturity. When I visited the island in the following July, eight months after,[4] marks of its devastations were everywhere to be seen, especially in the forests. What was most remarkable, was the variety of the effect that these exhibited, and that within a very limited space; conveying the idea that the air in motion constituting the hurricane acted in narrow currents. Thus it was not unusual to see one line of wood completely overwhelmed, a perfect wreck, levelled with the ground; while the adjoining trees had either suffered but little, being deprived only of a portion of their branches or, altogether unhurt. The same appearance of partial action, I was told, was witnessed in the cane fields, in which I was assured narrow strips were destroyed, in straight lines two or three feet wide, the adjoining canes not suffering.[5] And instances of the same, and even more remarkable, I heard related, as witnessed by individuals. The Lieutenant-Governor told me, that when the storm was at its height, and he was obliged to leave his house, to seek shelter in a cellar below, he carried a lighted candle the short distance he had to go, in the open air, and it was not blown out. This he mentioned, when another not less singular anecdote was related; --how in a house in which the books were blown from their shelves, and scattered about the room, one of the candles that was burning on a table, in the middle of the room, was not extinguished. Many other examples of such partial action were spoken of, --instances of

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[4] Davy believed that the hurricane struck on November 11, rather than October 11. Thus, eight months later is July, 1848. Tannehill (1944) cites October 10 as the date.

[5] Perhaps explaining why export figures for that year do not show a marked decline despite the widespread damage to sugar works (discussed below).

> frail structures escaping, when strong buildings adjoining were blown down, --of windows strongly barred, forced open, when others in the same house, the shutters of which were fastened only by a weak bit of cord, remained closed and uninjured. When the tempest was raging at the NE extremity of the island, the Barometer at Fort King George was little affected, though shortly afterwards, when it was witnessed in its violence there, the fall of the mercury was considerable--a little more than half an inch. This I learnt from the Medical Officer of the station, who watched the instrument at the time. During the hurricane there was a veering of the wind, almost in a circle, and the vortical tendency of the air in motion, I was told, was well exemplified in the gyration of the Reindeer steam packet, in the Gulf of Pariah, off Port of Spain, Trinidad, over part of which island the hurricane passed; and though with diminished, not without destructive effect (Davy 1971 [1854]:243-244).

Ottley (1950:73) adds to the list of devastation. He notes that throughout the island, sugar factories, churches and huts were destroyed, there was severe loss of life, several brigs were driven ashore, the roof of the barracks at Fort King George was torn off, and the prison walls fell down.[6] Woodcock enumerates the destruction:

> On the estates, thirty dwelling houses and twenty-six sugar works were demolished;[7] and thirty-one dwelling houses and thirty-three sugar works injured. Four hundred and fifty-six of the laborers' cottages were razed to the ground, and one hundred and seventy-six greatly damaged. In Scarborough and its environs one hundred and twenty-two houses of all descriptions, including out buildings, were blown down, and eighty-four much injured (1866:107).

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[6] Happily, the prisoners were so terrified that none took the opportunity to effect an escape.

[7] Dowland (1843-1848) puts the number of destroyed sugar works at 32.

After the hurricane, Tobagonians banded together to rebuild. The total loss to property was estimated at between £85,140 (Ottley 1950:74) and £150,000 (Woodcock 1866:107). In 1848, the crown contributed £5000 towards rebuilding (Ottley 1950), to which was shortly added a loan of £50,000, also by the crown, to be administered by Loan Commissioners appointed by the Governor of Tobago. Only £20,000 were accepted by Tobago, however. From the principal, funds of not less than £50 were to be made available to landed individuals.

Despite the ready availability of cash, only £13,222 were actually advanced for rebuilding (Woodcock 1866:109-110). A contributing factor to the slow rate of rebuilding was the financial collapse of the West India Bank almost immediately following the hurricane (Niddrie 1961:18). It is highly unlikely that all of the destroyed factories were rebuilt. Whereas Davy puts the number of functioning sugar works at 63 two years after the hurricane (1971[1854]:259), Woodcock shows only 65 by 1862 (1866:appendix 10). Following emancipation, declines in the tariff and trade protections for Caribbean sugar, and steadily decreasing prices, there was an even further loss of confidence in sugar on the part of Tobagonian planters during the late 1840s.

Encumbered Estates

The last gasp for Tobagonian sugar production was brought about by the enactment of the Encumbered Estates Act of 1854. Prior to that date, no estate could be sold unless all mortgages against it were first paid off. The Encumbered Estates Act altered this policy, allowing the transfer of titles for encumbered estates irrespective of their encumbrances. This process could be initiated by the owner of the estate or by the mortgagers. In addition, the mortgager could bid an amount up to the amount of the mortgage, without having to put up any cash.

Tobago applied for encumbered estate courts in 1858. By 1862, ten estates had changed hands (Phillips n.d.:Chapter 26). All 16 of the Tobago estates sold under the Encumbered Estates Act prior to 1868 passed into the hands of the mortgager (Green 1976:257). All tolled, 50 estates on Tobago were sold under the Encumbered Estates Act prior to its abolishment in 1893, at a total cost of £35,630 (Phillips n.d.:Chapter 26). The primary beneficiary of the act on Tobago was Gillespie & Co., which owned seven estates in St. David's Parish alone by the time of the company's financial collapse in 1884 (Niddrie 1961:20; Hay 1884:xii-xiii).

The demise of Gillespie & Co. effectively ended sugar production on Tobago, though the industry continued for some years through sheer inertia. In 1889 Tobago was politically

subordinated to Trinidad, and in 1898 it became a ward of that island. No Tobagonian production or export figures are available after 1891, since Tobago's figures were merged with those of Trinidad after that date (Deerr 1949:202). At least five estates were producing sugar as late as the early 1940s, though none was exported. These ceased operation nearly simultaneously in 1943, when the mill machinery was sold off as scrap to the US Army for the American war effort (Richard Grant and Mr. Spence, personal communication). Today, only a pair of brothers make sugar in any quantities, using equipment salvaged from abandoned estates and techniques that have been in use on Tobago since 1763. They do not refine their product past the wet sugar stage, and all is sold for local consumption.

CHAPTER 6
BACKGROUND TO ARCHAEOLOGICAL RESEARCH

Historical archaeology has been defined as "...the study of the processes and interrelationships by which human social and economic organization developed and evolved in the modern world" (Deagan 1988:8). The archaeology of sugar estates is an important part of this study because sugar estates combine features of both a pre-capitalist agricultural economy derived from medieval Europe and a capitalistic mode of production more characteristic of modern industrialized countries (Mintz 1985; Wolf 1982).

In the broadest terms, a "plantation" is an institution using coerced labor to produce agricultural goods for sale to an overseas market (Thompson 1984). In general, plantations, or estates as I will refer to them, have been characterized by mono-cropping, the focus on a single crop to the near exclusion of all others. Insofar as this implies that the majority of plantation profits are derived from a single source, it is apt. In Tobago the principal crop was sugar cane, although other products also played a prominent role on occasion. From the sugar cane grown on Tobago, muscovado sugar, rum and molasses were produced for

consumption in Britain, continental Europe and North America.

To say that all the land of a given estate was devoted to the principal crop would be erroneous, however, for the land was put to a variety of uses. Pastures and paddocks accommodated livestock; owner's residences were accompanied by a variety of outbuildings in well-defined yards, possibly with manicured lawns or formal gardens; villages or barracks areas housed the labor force; and gardens contributed foodstuffs to owners and laborers alike. All of these features are located at specific sites for specific reasons. Together they create a patterned whole that represents the adaptations of two distinct cultural groups, planters and slaves, to a similar but foreign natural environment. The present research examines estate layout and the natural and cultural environment on Tobago sugar estates.

Research Design

The research design used in this study is empirical, and gives primacy to materialist explanations. However, it attempts to go beyond strict materialism by identifying areas in which other mechanisms may be involved. Rather than focus on a single estate, a settlement pattern survey was undertaken for the present research. Such an approach has several advantages in the context of the central research question. The primary advantage is that it allowed

the formulation of a general model of estate layout and location which could then be examined at individual sites.

While a general model explicates and predicts broad patterns, it often does little to illuminate variation at a site-specific level. Since site-specific variation is a function of the same land-use principles that contribute to overall patterning, the failure of general models to account for this variation significantly weakens their explanatory and predictive power. The regional perspective adopted in this research necessarily included many sites within its purview. Treated as a whole these sites suggested a model of landscape utilization. Treated individually the same sites showed variation that the overall model could not account for. The overall model was then modified to incorporate the newly observed variation.

The Study Area

The study area for this project is St. David's Parish (see Figure 1-1). Since comparison of modern maps with those of the historic period reveals that the parish boundaries have not remained static, St. David's Parish is defined by its original boundaries as surveyed in the early years of settlement (e.g. Anonymous 1773; Byres 1776).

As a culturally created unit of land, St. David's Parish is an ideal study area for this research it because reflects the same concepts of land utilization as the layout

of estates. It also contains nearly all of the Courland River and much of its drainage system. Thus, the parish served as a definitively bounded unit that also has the advantage of spanning the three major topographical zones of Tobago.

St. David's Parish covered an area of 8,720 acres and was divided into 44 lots by the initial surveys (Jefferys 1794). In 1811, 8,650 acres were occupied or claimed by estates. However, particularly on the northwest coast, large tracts remained unimproved, as did some smaller tracts in the middle portion of the parish. In that year the parish contained 22 sugar estates and one estate devoted to stock raising (Young 1812a:91). With two exceptions, these estates are wholly contained within the parish. The extrusive portions of the exceptions, Courland and Runnemede, are included in the study conceptually. However, as no physical remains were encountered on these estates outside of the parish boundaries, extrusive portions are not included graphically (e.g., Figures 7-1 and 8-1--see following chapters).

Young describes St. David's Parish as follows:

> From the year 1765, the very year that the colonization of Tobago was instituted, St. David's parish was a favorite ground of adventure, whilst intermediate to the mountainous, and to the level division of the island, it seemed to have the advantages of each. It exhibits the like groves of fine timber as St. John's to the east, but more accessible, the main ridge as it here terminates, dropping gradation, to gentle swells of hill. Its soil is rich, as that of St. Patrick's to the

> west, and if its surface is not actually even, to admit of tillage by the plow, it has other advantages, which St. Patrick's has not. It has rivulets to turn its sugar mills, and especially the fine river of Courland, which for four miles runs westward on its southern border, then winds to the north, centrally divides the parish, in its course to disembarque in Courland bay, and turns eight watermills ere it reaches the sea.
>
> Eight of the plantations in St. David's inland have the advantage of easy cartage by the public high road to Scarborough and to Courland. Four other plantations lay near the latter bay, and the plantations eastward drogher [ship by small coasting vessels] from the small bays of King Peter's and Arnos Vale (Young 1812a:93-94).

Methods

The methods adopted for this research are standard techniques. As outlined in Chapter 1, they consisted of a documents search, regional survey, intensive site survey, and limited site testing. Fieldwork was undertaken in three stages. Preliminary fieldwork began in May of 1992 and lasted for two months. The main body of the fieldwork was completed between January and June, 1993. Finally, most of the excavation was undertaken in August and September of the same year.

The regional survey and the documents search were undertaken concurrently. The objective of this initial stage of research was to locate all extant structural remains within the project area associated with sugar

production.[1] As the size of the survey tract prohibited a 100 percent sample, sugar factories were assumed to be closely tied to local hydrology. Initial surface survey focused on major watercourses. Supplemental information from historic maps now housed in the Museum of Tobago History, Fort King George, Tobago, or in the possession of Mr David Phillips, Prospect Estate, Tobago, and informal interviews with local informants proved a more effective means of locating sites. While the information derived from maps and informants was rarely specific, enough detail was available to significantly increase the effectiveness of surface survey techniques.

Following regional survey, intensive surface survey was undertaken at three sites. Sites were selected when all major site components were present or likely to be present, when the integrity of major architectural remains was good, and when the subsurface archaeological deposits were apparently intact. Data derived from the regional survey and from the documents search were used to determine the suitability of sites for intensive surface survey.

Intensive survey yielded a variety of site-specific locational and design related data. During the course of survey, scale drawings of individual structures were produced. In addition, instrument survey was conducted to

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[1] These consisted of sugar factories, estate houses and associated outbuildings. No remains associated with estate villages were initially identified.

precisely locate all structures in geographic space. This information was transferred to graphic format by plotting the structures on modern topographic maps. Finally, terrain analysis, both in the field and on the maps in the laboratory, was undertaken, producing information not only on how site elements related to one another, but on how they related to local terrain features such as hilltops, slopes and watercourses. Because multiple sites were placed on the same map, in many cases it was also possible to determine how site elements at one estate related to site elements at adjoining estates.

Because estate villages leave ephemeral remains on the surface (Armstrong 1990; Handler and Lange 1978), following a subsurface reconnaissance survey a program of limited excavation was undertaken. Locating and defining the internal structure of at least one village was seen as an important part of the overall research objectives as they were initially formulated. The siting of estate villages was selected by the planter and reflects his concept of landscape utilization. Within the village, however, an entirely different concept of landscape utilization, that of the African slaves and their descendants, may be apparent (Higman 1988; Pulsipher 1992). This research was initially designed to contrast these two world views.

Testing to document the internal patterning of an estate village included 50 by 50 centimeter shovel testing

at a 50 meter interval to determine site boundaries and additional shovel tests at a 25 meter interval to reveal artifact variability within the site. Prior to fieldwork, the intention was to further narrow the shovel test interval and use artifact densities to preliminarily determine village layout. However, as many surface features were present at the site that with initial testing seemed to represent architectural remains, the program of shovel testing was abandoned in favor or additional testing at surface features. The location of each feature was mapped, and trenching and block excavations were undertaken to locate individual structures within the site. Unfortunately, these efforts met with limited success. The internal patterning of the estate village was only tentatively defined.[2]

Summary of Estate Features

A wide variety of features associated with the sugar estates in the study area were encountered during the course of fieldwork. In archaeology, a feature can be defined as any remnant of past human activity that cannot be removed from its location without disturbing its structural

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[2] The tested site, Courland village (see Chapter 8) represents an intensive domestic occupation of a circumscribed area for at least 80 years. The complexity revealed by the limited excavation undertaken by this research indicates that much more extensive testing is required before the internal patterning present at the site can be accurately defined.

integrity. In the context of this discussion, however, features include such things as buildings or their remains, which conform to the above definition, and cast iron hardware such as a crushing mill or a water wheel associated with sugar production. Although items in this latter category can be moved, due to their size and weight such an undertaking would be unlikely.

The main focus of economic activity on a sugar estate was at the sugar factory, a complex of buildings where juice was extracted from the canes and transformed into muscovado sugar, molasses and rum. In broad outline, a sugar factory complex consists of a power source, a mill house and a sugar works. The latter, in turn, consists of a boiling house, a curing house, a still house, and a worm tank. All of these features are discussed below.

Crushing Mills and Power Sources

The first stage of sugar production after harvesting the cane occurs at the mill house. This building houses the crushing mill which separates the juice from the sugar cane by crushing the canes between large rollers. The rollers[3] are set in an iron frame. In some cases three rollers are

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[3] The earliest documented crushing mill rollers, invented in the fifteenth century, were made of wood (Mintz 1985). Later, wooden rollers were encased in iron to increase their efficiency. By the mid-eighteenth century, roller construction was entirely of cast-iron (Sitterson 1953). All extant rollers on Tobago are made of iron.

set in the frame side-by-side and upright. This is a vertical roller mill. A later and more-efficient design is the horizontal roller mill, in which two rollers are set side-by-side on a horizontal axis, while a third roller is located on top of the seam between them (Deerr 1950; Eubanks 1992).

Power to drive the mills was derived from a variety of sources. During the years of peak production, the most efficient and desirable power source was via a water wheel, for the reasons discussed in Chapter 4 (above) and due to their predictable power delivery "...thus fixing the computation of how much sugar is to be made, in what time, and when to be shipped so that the merchant vessel to be freighted may be ready at anchor in the particular bay" (Young 1812a:213).

In practice, water was diverted from a stream bed into a canal, and thence to a water wheel which was connected to the mill by a series of drive shafts and gears. Wheels were housed in a wheel pit, usually constructed of brick, and were one of four types. To power an overshot wheel, water was transported from the canal in a sluice-way to a height above the top of the wheel, and dropped on the far side. Because both the weight and the force of the water drove the wheel, this was the most desirable set up. A backshot wheel was similar, but the water was dropped on the near side of the wheel. Only the weight of the water provided power. A

breastshot wheel was used when the canal was not higher than the wheel. In this instance, the water was transported to a point slightly above the mid-section of the wheel and dropped. More water was required than for either a backshot or overshot wheel. Finally, a great deal of water was required for an undershot wheel, where the force of the water in its channel, rather than its weight, drove the wheel (Eubanks 1992). The wheels extant on Tobago today are all of the overshot type, although the wheel pit for at least one breast shot wheel has been identified. Backshot wheels were also probably present in the past.

The most frequently used power source, at least during the initial years of sugar production, was the wind. To utilize wind power the crushing mill was housed inside a windmill. The base of the windmill was constructed of stone or coral blocks, with bricks used to make design features. A wooden structure that could be turned to face into or away from the prevailing breeze was built atop the base. Initially, the base was low, and hexagonal or circular, with a tall sail house. As Tobago's trees were cut down, lumber became more expensive. Eventually, tall, circular windmill towers of stone or coral, with small surmounting sailhouses, became the norm. Many of these towers dot the landscape today.

Where water or wind power was not feasible, cattle mills were often used. Oxen or other traction animals were

yoked to long poles, which in turn were attached to the crushing mill by drive shafts and gears. The oxen would circle a track atop a massive circular foundation. The best preserved example on Tobago is at Englishman's Bay Estate and was constructed with interior and exterior walls of stone and brick with rubble fill in the intersticial areas. It is approximately 15 meters across, and has walls more than three meters thick at the top. A gap is constructed into the wall so that the cane juice can run from the mill to the works. The crushing mill, if it was of the vertical type, was housed in the center of this structure. If it was horizontal, it would have been somewhat offset.

In the first years of the nineteenth century, steam power was introduced to Tobago (Young 1812a:91; Deerr 1950:553). Steam engines were constructed almost entirely of cast iron parts. The major features included a boiler in which water was boiled and the steam was raised, various parts of the engine itself and a heavy flywheel, the rotating weight of which drove the mill with enough force to crush the cane. Again, these were attached to the mill with a system of gears and drive shafts. The remains of several steam engines are present on the island today. The sites of many more are identifiable because the engines themselves sat on and were partially housed by a distinctive brick structure. Essentially, the top of the engine was exposed to view, while the lower portion was housed in a brick tank,

called a hot well (Deerr 1950:554). Examples of hot wells on the island are approximately two meters long, 75 centimeters wide and one meter deep.

Occasionally, the type of crushing mill can be identified in conjunction with the power source even when the mill itself is not present. The power from a water wheel is transmitted on a horizontal axis (via the central axle of the wheel). If it is being used to drive a vertical mill, beveled gears are required to transfer the power from the horizontal to the vertical plane. Thus, if beveled gears are present on a water powered site, the crushing mill itself was of the vertical type. Known steam engines on Tobago also transmit power in the horizontal. Although the situation has not arisen on known Tobago sites, the exact opposite is the case with cattle mills, which transmit power on a vertical axis--the presence of beveled gears on a cattle mill site would indicate that a horizontal mill was in use. The same cannot be said of windmills, because beveled gears are required no matter what the mill type to transfer power from the horizontal axis of the sails to the vertical drive shaft.

The Sugar Works

The several products of a sugar estate, muscovado sugar, molasses and rum, are produced in the sugar works. In general, a sugar factory is composed of three buildings

(or rooms): a boiling house, a curing house, and a distillery. Occasionally these buildings are discontiguous, but more frequently they are arranged in a linear fashion, or in such a way that they form a "T", or an "L". Whatever the arrangement, the boiling house is usually a one story building, while the curing house and the distillery are two story buildings.

The following description of the various manufacturing processes includes operations performed at the crushing mill. It is derived from Deerr (1950), Eubanks (1992:19-35), Moreno Fraginals (1976), Scard (1913:61-71), and Wray (1848:390-412). The numbers in parentheses refer to Figure 6-1, which in turn is derived from a plan view of the Providence Estate complex as it existed in about 1830 (McTear n.d.:107-108). The complex is T-shaped.

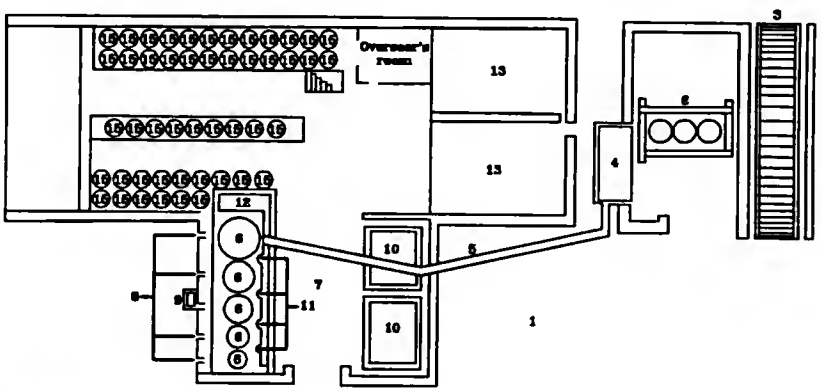
The first step in the manufacturing process is the extraction of juice from cut cane. During harvest cut cane is brought to the mill yard (1) on carts or by other means. Juice extraction is performed by a horizontal crushing mill (2) driven by a water wheel (3). The extracted juice is allowed to flow into a clarifying tank (4) where contaminants are allowed to settle out. Once clarification has taken place, the juice flows through a gutter or pipe (5) into the boiling house.

In the boiling house, the juice is allowed to flow into the first, and largest, of a series of round-bottomed, iron

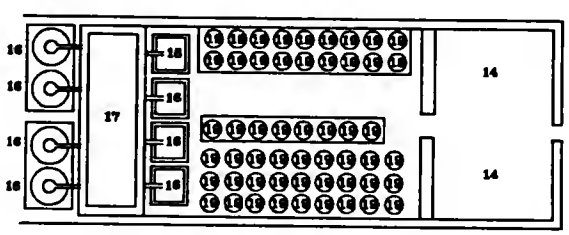
Providence Sugar Factory
ca. 1830

(Upper story after McTear n.d.:107–108)

Upper story



Lower story



1--Mill yard
2--Vertical crushing mill
3--Water wheel
4--Clarifying tank
5--Juice pipe
6--Coppers
7--Boiling house floor
8--Temperature control outlets
9--Chimney
10--Cooling and crystalization tanks
11--Skimmings gutter
12--Skimmings tank
13--Molasses draining
14--Molasses receivers
15--Fermentation vats
16--Stills
17--Worm tank
18--Rum receivers
19--Aging rum

Figure 6–1. Providence Sugar Factory, ca. 1830

pans, individually and anomalously called coppers (6), and collectively referred to as a train. All identified trains on Tobago are of the type known as jamaica trains, which contain five coppers. In the first copper, the juice is heated to the boiling point using bagas, the dried remnants of crushed canes, after which it is transferred to a second, slightly smaller copper by boilermen standing on the boiling house floor (7). The transfer is accomplished using long-handled ladles. Because copper size is directly related to the surface area from which liquids in the juice can evaporate, coppers of progressively decreased size allow greater control of evaporation during the course of the boiling process. Beneath the train, the temperature of individual coppers is carefully controlled by a sophisticated system of dampers (8) opening into a central flue connected to a tall chimney (9). A damper is associated with each copper, and can be opened or closed singly or in groups to vary temperature at the direction of the head boiler.

The boiling juice is transferred from copper to copper until finally it is placed in the fifth and smallest copper, called the strike pan. In the strike pan, crystallization begins to occur, at which point the juice is transferred into cooling and preliminary crystallization tanks (10) where it is allowed to cool and the crystallization process

continues. The end result of the boiling process is wet sugar.

While boiling takes place, a film forms in the coppers on the surface of the juice. This film, called skimmings, is removed by the boilermen with their long handled ladles, and placed in a gutter running alongside the train (11). The skimmings gutters are easily recognized by evenly spaced convexities in their walls. The convexities increased the efficiency of the boilermen overseeing the boiling process and decreased wastage by providing a convenient place to pour skimmings with the unwieldy ladles. From the gutter the skimmings collect in a tank (12) and are later used in the rum-making process.

Once the wet sugar has cooled, it is placed in casks which are transferred to the upper floor of the curing house (13) where crystallization continues. Because the casks have holes in their bases, the portion of the wet sugar that does not crystallize drains into receivers below (14). This drained portion is molasses. It could either be sold as a finished product or further transformed in the rum-making process. The crystallized portion of the wet sugar is muscovado sugar. On Tobago, muscovado sugar was shipped to British ports where it was further refined and sold as table sugar.

The rum-making process takes place in the distillery. The first step involves placing molasses and skimmings in

large vats (15), adding yeast, and allowing fermentation to take place. Once fermentation has occurred, the resulting alcohol-enriched syrup is transferred to a still (16). As the syrup is heated in the still, the alcohol is transformed into vapor which exits the still through a small-diameter tube at the top. From this tube, the gasses then run into the worm tube, a convoluted pipe of similar diameter. While the distal end of the worm tube is connected to the still, the proximal end protrudes into the interior of the distillery itself. The convolutions of the worm tube, which increase its surface area, occur in a worm tank (17), a water-filled tank that cools the worm tube and thus hastens condensation.[4] The condensed clear liquid that flows from the worm tube into the distillery is raw rum. It is collected in a receiver (18) and transferred to wooden casks. Water is then added to reduce the alcohol content, and the rum is then allowed to age in the casks prior to shipping (19). Rum in its pure form is a colorless liquid. Molasses can be added after distillation to both impart color and enhance flavor. Aging in casks of certain types of wood has a similar effect.

It should be noted that the force of gravity was often used when transferring liquids from place to place in the

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[4] The worm tank is a massive structure shaped something like a large bath tub. The interior is lined with plaster, and the corners are rounded. Worm tanks at sites dating to the later period of sugar production on Tobago show less corner rounding than do those at earlier sites.

sugar works. Thus, the juice-pipe leading from the clarifying tank to the coppers was a gravity-feed pipe, which necessitates that the crushing mill be located at a higher elevation than the jamaica train. Crushing mills were often placed on high platforms for this reason. Gravity was also utilized within the sugar works itself, and the works were most often built to take advantage of natural topography. While the illustrated boiling house sits at ground level, its floor is at roughly the same elevation as, or slightly higher than, the upper floor of the curing house and the distillery. This allowed liquids such as skimmings to flow from the skimmings trough in the boiling house to the skimmings tank in the upper story of the distillery.

The tendency to use the force of gravity in the sugar, molasses and rum-making processes frequently allows ready functional identification of sugar factory components in the field; crushing mills are generally located at higher elevations than boiling houses and boiling houses are generally higher than curing houses and distilleries. Within the distillery, the still(s) is usually located at the lowest elevation. This allows fermented molasses to be gravity-fed to the still. Because the vapor produced in the still is lighter than air and is under pressure, it travels upwards under its own impetus from the still and into the worm tube. The worm tube extends from the top to the bottom of the worm tank in a series of coils. In the worm tank the

vapor is forced downwards through the worm tube by pressure from the still until cooling and condensation occur. Once condensation takes place, the resulting rum, a liquid, flows downwards under the force of gravity into the rum receiver.

Estate Houses

Estate owners lived in large residences, at some distance from the factory complex. In addition,

> the planter's mansion is generally situated on the highest ground of his estate, not only for freshness of air and for health, but to command a view of his negroe village, of the sugar works, and generally what is doing on the plantation (Young 1812a:166).

That hilltops were the site-of-choice for estate houses is mirrored by an old saying still remembered on Tobago today: "To find massa, look up." The estate house locational model embodying horizontal and vertical separation from both the estate village and the sugar factory has been noted as a pattern throughout the Caribbean (e.g. Armstrong 1990; Handler and Lange 1978; Higman 1988).

Characteristic construction materials were used at Tobago's estate houses, often making their sites readily identifiable. Brick and stone are the predominant construction materials still extant on estate house sites today. In the absence of evidence to the contrary, most researchers have assumed that all bricks were imported to Tobago as ship's ballast. Young (1812a:103), however, notes

that there was a small brick industry on the island by the early nineteenth century.

Construction techniques applied to estate houses were also somewhat unique. In general, the houses were of wood, elevated on a series of brick piers. Often, the piers would have decorative elements of stone. Access to the houses was gained by mounting stairs, which were frequently constructed with one or more graceful brick arches supporting them, and occasionally with additional elements that were both structural and decorative.

Many estate houses were completely destroyed by the hurricane of 1848. Some of these were reconstructed. By the mid nineteenth century, concrete seems to have replaced brick as the preferred building material. Some of these later structures were constructed on piers like their earlier manifestations (e.g., the Courland new estate house, discussed below), while others were constructed on solid foundations (e.g., the Alma estate house in St. George's Parish). The arched stairway continues to be a prominent design element in Tobagonian today.

Estate Villages

The final major element of Tobago's sugar estates is the estate village, which housed the slaves and, later, the free laborers of the estate. In the locational model alluded to above, the estate village occupies a position

overwatched by the estate house and with access to both the cane fields and the sugar factory complex. Nevertheless, estate villages are exceedingly difficult to locate archaeologically, because they were often built with less durable materials.

Most estate villages encountered during fieldwork were located with the aid of historic maps. Higman (1988) argues against the temptation to reconstruct villages based on such maps, noting that many maps present only the ideal layout rather than the real. Research in the Caribbean indicates, however, that estate villages tend to conform to patterned layouts that contrast with those of the overall estate. Two formations appear to be dominant. The earlier arrangement, most likely, is rigidly aligned rows of slave houses facing a common lane or road. The purpose of such a layout may have been to enhance planter control over the slaves through regimentation and the imposition of European spatial arrangements (Higman 1988). In other cases, however, village layout is less rigidly-ordered and consists of seemingly random clusters of houses. The shift to an apparently random housing arrangement may reflect the development of increased internal autonomy on the part of the laborers as they became better adapted to the estate regime and life in the Caribbean (Armstrong 1990).[5]

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[5] If these "apparently random" arrangements were indeed generated by the slaves, they were probably not random at all. Rather, they likely reflected kinship divisions within

Young had this to say about the villages of Tobago during a visit in 1792:

> The negro houses throughout Tobago are much superior to those in St. Vincent's, or even in Antigua. Mr. Franklyn, junior,[6] informs me that each of his negro's houses has cost him 23 johannes or above forty pounds sterling, including the necessary labour. These houses are built of boards, uniform throughout the estate, are about 26 feet long by 14 wide, consisting each of two apartments, besides a portico or covered walk with a seat in front, of which a closet at the end is taken from the portico to form a small kitchen or store room. The roof is of shingles (in Edwards 1819 vol. 3:277-278; see also Woodcock 1866:65).

Summary

A broad variety of features were present on Tobago sugar estates. Sugar factories and their various components were designed for industrial purposes--the manufacture of sugar, molasses and rum--while estate houses and villages in contrast were the scene of essentially domestic activities. During the course of the St. David's Archaeological Survey many of these features associated with more than 20 sugar estates were located on the landscape. The following chapters discuss the results of the survey, focusing

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the village, a frequent African organizational practice (e.g., Beattie 1960; Gibbs 1965; Hart 1982; Middleton 1965). Alternatively, given the extremely disruptive effect the slave trade had on the family, they may reflect the tribal ties or more general linguistic affiliations individual slaves derived from their specific cultural backgrounds.

[6] Possibly, Young is referring to the Franklyn for which Franklyn's Estate (St. David's Parish, discussed below) is named. By 1811, however, the Franklyn's owned Hope Estate in St. George's Parish (Young 1812a:75).

initially on a regional perspective followed by more intensive investigation at selected estates.

CHAPTER 7
RESULTS OF REGIONAL SURVEY

Although the bulk of the regional survey was accomplished during the first period of research and early during the second period, regional survey activities were continued throughout all three periods of fieldwork as further locational information came to light. Because they contain the most massive and durable construction, initial efforts focused on locating sugar factory complexes.

A total of 27 factory complexes or their sites were located during the regional survey. Of these, 17 were previously unknown, bringing the total number of known factory sites on the island to 59. Twenty-two factory complexes were located in the study area. Three estates, Adventure, Lower Quarter and Runnemede, contain two factory complexes each, bringing the number of estates with associated factory complexes in the study area to 19.

At most of the factory complexes it was possible to identify the power source driving the cane crushing mill. In one instance, however, this proved to be impossible although, most likely given the absence of the more massive architecture associated with alternative power sources (discussed below), it was steam driven. The identifiable

power sources driving the crushing mills of St. David's Parish ran the gamut of available technologies. The remains of ten windmill towers,[1] nine water wheels and/or wheel pits, five steam engines, and one cattle mill were identified. In one case, a water wheel and a steam engine were adjacent to the same mill, indicating that one was a back-up for the other.

Locating estate houses was more difficult, because their method of construction utilized more wood. Thus they were less massive and less durable factory complexes. Nevertheless, the remains of 17 estate houses were identified in the study area, and the possible location of two others were noted.

Estate villages were located by surface survey and sub-surface testing while referring primarily to the Carte Militaire (Anonymous 1784). The encumbered estates map of Orange Hill and Amity Hope (Anonymous n.d.) was also used. The locations of four estate villages were verified, and an additional five are indicated on the Carte Militaire or by other sources but were not field checked or were unsatisfactorily verified.

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[1] These ten towers were for operating crushing mills. An additional windmill tower exists on Courland Estate. Smaller than those designed to house a crushing mill, it housed a water pump that was used to transfer water from the Courland River to the Courland estate house and factory complex.

The results of the regional survey are summarized in Table 7-1 and discussed below. The location of the major site components encountered during the survey--factories, estate houses and estate villages--are identified in Figure 7-1.

Site Descriptions

A description of the located archaeological remains associated with each of the sugar estates in the study area is presented below. Additional information about each estate derived from the documentary sources is provided in Tables 7-2 and 7-3. This information relates to estate boundaries, ownership, production and population. Individual land lots in St. David's Parish are depicted in Figure 7-2.

Adventure Estate

Adventure Estate is located in the western part of St. David's Parish, and is bordered on the south by the Courland River and on the northwest by the town of Plymouth. The terrain consists of gently rolling, low hills. The maximum elevation is slightly more than 70 meters above sea level while the minimum elevation approaches sea level.

The remains of two sugar factories are located on what was once Adventure Estate, one wind powered and one water powered. Due to preservational and architectural characteristics and the greater efficiency of water power, I

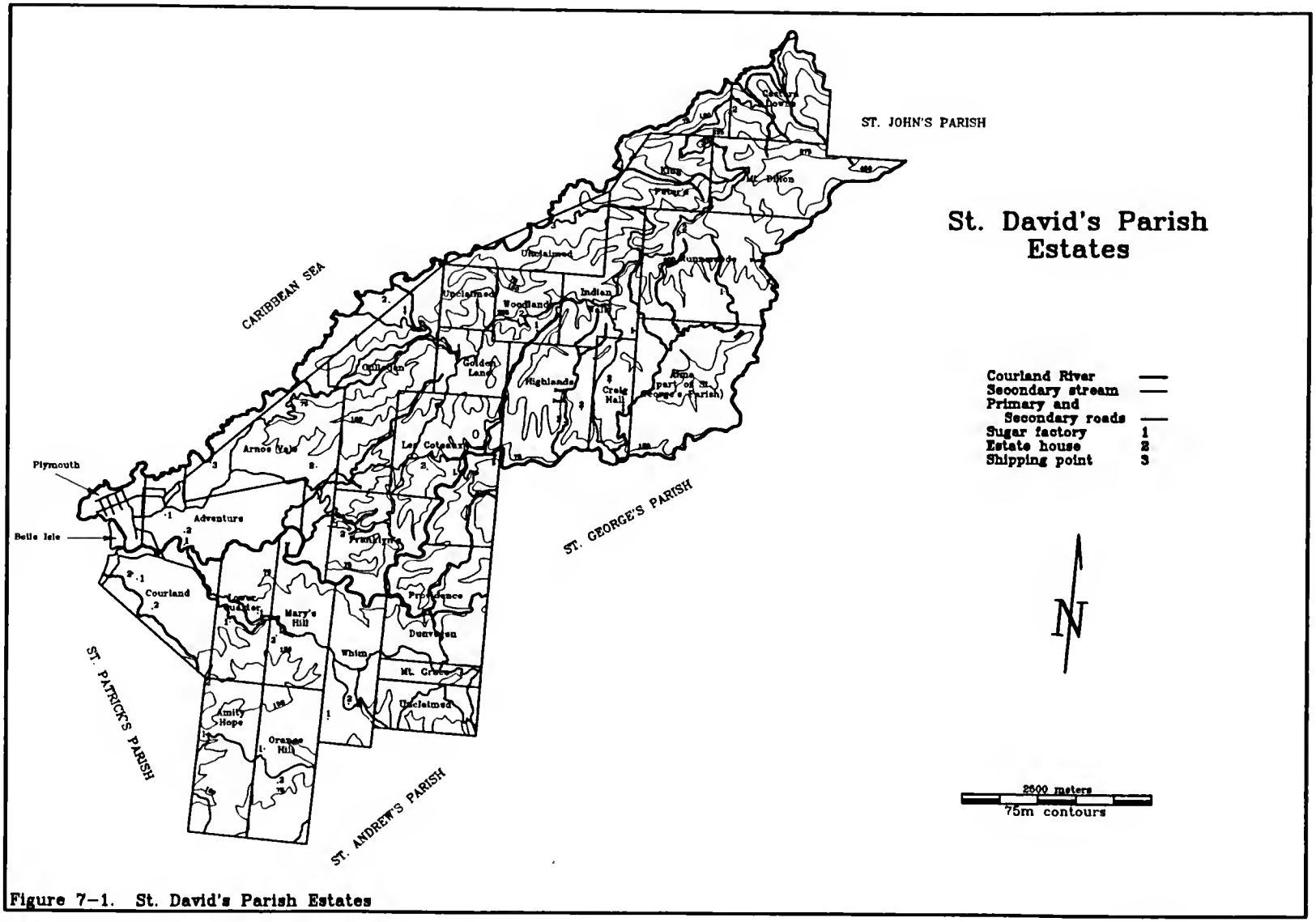

Figure 7-1. St. David's Parish Estates

Table 7-1. Summary of estate components identified during regional survey

Estate	FC	WM	WW	SE	CM	EH	EV
Adventure	2	1	1			1	1
Amity Hope	1	1				1	?
Arnos Vale	1		1	1		1	?
Castara Downs						1	
Courland	1	2				2	1
Craig Hall	1		1			1	
Culloden	1					1	
Dunvegan						?	
Franklyn's	1			1		1	
Golden Lane	1				1		
Highlands	1		1			1	
Indian Walk	1			?		?	
King Peter's	1			1			
Les Coteaux	1		1			1	1
Lower Quarter	2	1	1	1		1	?
Mary's Hill	1	1				1	?
Mt. Dillon							
Orange Hill	1	2				1	1
Providence	1		1				?
Runnemede	2		1	1		?	
Whim	1	1				1	?
Woodlands	1	1				1	

FC=Factory complex; WM=Windmill; WW=Water wheel; SE=Steam engine; CM=Cattle mill; EH=Estate house; EV=Estate village--numerals indicate the number of components identified for a given estate; question marks indicate a probable identification.

Table 7-2. Estate and lot ownership for various years

Lot	Grantee(s)	1807	1811	1832	1867	1884
Adventure Estate						
20	R. Ottley	J. Lowrie	Ottley heirs	W. Ottley	R. Gordon	Gillespie & Co.
21	"	"	"	"	"	"
22	"	"	"	"	"	"
23	"	"	"	"	"	"
27	"	"	"	"	"	"
Amity Hope Estate						
5	T. Gibbon	J. Balfour	J. Balfour	Balfour heirs	E. Ellice	Gillespie & Co.
6	J. & A. Gibbon	"	"	"	"	"
Arnos Vale Estate						
24	J. & A. Gibbon	S. Drysdale	Drysdale	Davison & Simpson	Kitson heirs	J. Kitson
25	"	"	"	"	"	"
Castara Downs Estate						
28	W. Sewitt	J. Ross	P. Murdock	N/A	N/A	N/A
30	W. Lucas	"	"	"	W. Desvignes (Mt. Dillon)	M. Desvignes
Courland Estate						
1	J. Simpson	R. Petrie	Petrie heirs	G. & J. Petrie Reps.	D. Gordon	T. Reid
Craig Hall Estate						
18	J. Burn	G. Craig	C. Wightman	N/A	W. Desvignes	M. Desvignes

Table 7-2 (cntd.).

Lot	Grantee(s)	1807	1811	1832	1867	1884
Culloden Estate						
15	P. MacVicar	H. Robertson	McCullogh	N/A	J. Kirk et al. (Highlands)	J. Kirk
42	G. Forbes	"	"	"	B. Alleyne	Alleyne Heirs
Dunvegan Estate						
10 (part)	T. Brown	W. McLeod	McLeod heirs	Hall heirs	S. Isaacs	T. Reid
Franklyn's Estate						
12	A. Richardson	J. Morrison	J. Morrison	C. Gray	J. Urquhart	D. McGillivray
13	"	"	"	"	J. Hackett (Les Coteaux)	J. Hackett
14	"	"	"	"	J. Urquhart	D. McGillivray
Golden Lane Estate						
43	R. Farr	W. Lamont	G. Morrison	Willis et al.	Trick Tom heirs	C. Tom et al.
44	"	"	"	"	"	"
Highlands Estate						
17	A. Alexander	J. MacVicar	J. MacVicar	C. Gray	J. Kirk et al.	J. Kirk

Table 7-2 (cntd.).

Lot	Grantee(s)	1807	1811	1832	1867	1884
Indian Walk Estate						
35	J. Hamilton	J. Hamilton	J. Hamilton	J. Hamilton	McDougall & Witz	Gillaspie & Co.
40	A. Stewart	"	"	"	"	"
41	J. Hamilton	"	"	"	"	"
King Peter's Estate						
31	G. Glover	L. Dupras	L. Dupras	N/A	J. Leith	N/A
33	W. Forbes	"	"	"	Unknown	N/A
Les Coteaux Estate						
11	A. Allen	G. Morrison	G. Morrison	Wylie et al.	J. Hackett	J. Hackett
16	P. MacVicar	"	"	"	Kirk et al. (Highlands) & J. Hackett	Kirk (Highlands) & J. Hackett
Lower Quarter Estate						
2	W. Brown	J. Callow	J. Callow	Miss Campbell	R. Gordon	Gillaspia & Co.
Mary's Hill Estate						
3	J. Macnaa & F. Young	J. Campbell	J. Campbell	A. Campbell	H. Morrison	Gillaspia & Co.
Mt. Dillon Estate						
32	M. Glover	J. Desvignes	J. Desvignes	Desvignes hairs	J. Leith (Runnemeda)	J. & E. MacDougall
Orange Hill Estate						
4	G. & J. Kaarton	J. Balfour	J. Balfour	Balfour hairs	E. Ellica	Gillaspia & Co.
7	J. Hamilton	"	"	"	"	"

Table 7-2 (cntd.).

Lot	Grantee(s)	1807	1811	1832	1867	1884
Providence Estate						
10 (part)	T. Brown	J. Anderson	J. Anderson	Davison & Simpson	C. Castella	C. Castella
Runnemede Estate						
36	W. Forbes	C. Irvine	C. Irvine	Irvine heirs	J. Leith	J. & E. MacDougall
Whim Estate						
8	G. Young	C. Hamilton	C. & J. Hamilton	J. & J. Hamilton	O'Neil & Simpson	Gillespie & Co.
Woodlands Estate						
38	W. & J. Irvine	W. Irvine	W. Irvine	Douglas & Irvine	J. Kirk	J. Kirk
39	"	"	"	"	"	"

After Hay 1884:xii-xiii; Woodcock 1866:Appendix 7, Appendix 10; Young 1809:94, 1811a:91

Table 7-3. Summary of St. David's Estates, 1811

	Lands			Europeans			Slaves				Produce	
Estate	Lots Granted	Acres	Water Mill?	Owner(s)	Res?	White Servants	Male Slaves	Female Slaves	Child Slaves	Total Slaves	Sugar (Hhds.)	Rum (P.)
Adventure	21, 22, 23, 27	350	Yes	Ottley Heirs	No	3	56	59	26	141	110	90
Amity Hope	5, 6	400	No	Balfour	N/A	2	44	38	26	108	90	60
Arnos Vale	24, 25	400	Yes	Drysdale	No	3	65	45	28	138	100	70
Castara Downs	28, 30	300	No	Murdock	Yes	1	23	29	18	70	50	30
Courland	1	500	No	Petrie Heirs	No	4	160	166	127	453	300	210
Craig Hall	18	400	Yes	Wightman	Yes	2	25	29	13	67	60	45
Culloden	15, 42	400	Yes	McCullogh	No	2	47	67	41	155	120	70
Dunvegan	Part of 10	200	No	McLeod Heirs	No	2	32	34	28	95	80	60
Franklyns	12, 13, 14	400	No	J. Morrison	No	3	115	75	37	227	170	120
Golden Lane	43, 44	200	No	G. Morrison	Yes	2	37	38	20	95	80	60
Highlands	17	450	Yes	McVicar	Yes	2	51	51	51	153	120	80
Indian Walk	35, 40, 41	500	No	J. Hamilton	No	2	80	72	43	195	160	110
King Peters	31, 33	400	No	Dupres	Yes	1	24	24	16	64	50	35
Les Coteaux	11, 16	750	Yes	G. Morrison	N/A	5	178	181	119	478	280	220
Lower Quarter	2	300	No	Callow	No	2	72	76	20	168	120	80
Marys Hill	3	300	No	J. Campbell	Yes	2	66	64	48	178	140	90
Mt. Dillon	32	250	No	Devignes	Yes	1	15	29	6	50	40	30
Mt. Grace	26	200	No	D. Campbell	Yes	1	33	40	26	99	Pasture	
Orange Hill	4, 7	300	No	Balfour	Yes	4	82	89	62	233	180	120
Providence	Part of 10	350	Yes	Anderson	Yes	4	86	83	30	199	160	100
Runnemede	36	500	Yes	C. Irvine	No	3	88	66	66	220	200	130
Whim	8	400	No	C. & J. Hamilton	Yes	2	79	89	44	212	180	120
Woodlands	38, 39	400	No	W. Irvine	No	3	79	76	80	235	200	140

After Young 1812a:91

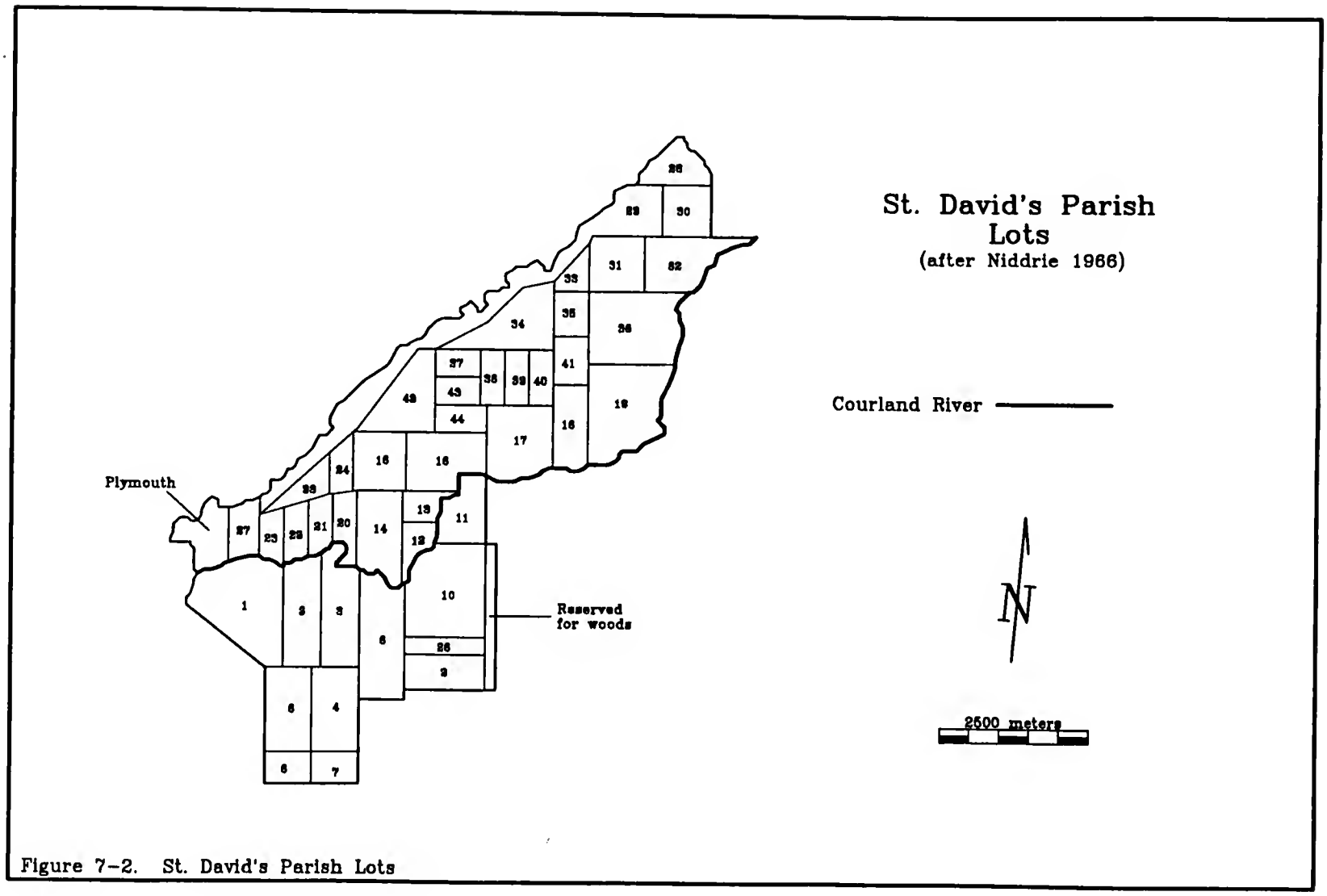

Figure 7-2. St. David's Parish Lots

believe the wind powered site to be the older. It is referred to as Adventure old works.

The most prominent feature of Adventure old works is the base of a hexagonal windmill tower approximately six meters in diameter. The remains of a small sugar factory are located 54 meters away, down a gentle slope trending to the west. Both are in a very poor state of preservation. They are located on the end of a low finger ridge overlooking the modern town of Plymouth, and are adjacent to a school. Much of the masonry has been carried off for later building. No hardware associated with sugar production is present.

The remains of an estate house are located 315 meters southeast of the old works on the hilltop from which the finger ridge extends. Very little remains of the estate house. A dense scattering of rubble consisting of brick, masonry and a pier fragment is present on the surface, as are eighteenth and nineteenth century ceramic sherds of British manufacture. A single copper is present on the site. No information about the form of the estate house was recoverable, but a two meter portion of a stone foundation, oriented to N103E°, may be intact.

The Carte Militaire (Anonymous 1784) shows both the estate house and the old works. Located slightly south of a line between the two, and closer to the house, are 18 small dots that represent individual structures in the estate

village. They are arranged primarily in four rows of four, with two outliers to the east. Despite extremely poor surface visibility, a light surface scattering of ceramics similar to those found at the estate house was encountered in the village area defined by the map. Several additional structures are shown which are larger than the village structures, but no evidence of them was found. The area is currently used lightly as pasture, and is covered by a dense growth of coarse grasses.

Adventure new works is located 115 meters south of the estate house, adjacent to the Courland River. The new works does not appear on the Carte Militaire. However, in Young's tables (1812a:91) the estate is listed as being water powered, indicating that Adventure new works was built sometime between 1784 and 1811. An abandoned road leads from the estate house to the new works, indicating that they were occupied concurrently.

Unlike the other components at Adventure Estate, the new works is in a good state of preservation. It consists of a wheel pit and adjacent mill house, and an L-shaped sugar works. The wheel has separated from its attachment to the mill, but is present, as is the mill itself. The mill is of the horizontal-roller type. Lettering cast into its side reads: "A & W Smith & Co. No. 69 Glasgow 1869." The wheel is an overshot type.

Water for the new works was drawn from the Courland River. Following the north side of the river for a distance of nearly two and a half kilometers is a masonry-lined canal which transported water from a diversion dam on the Courland River to the water wheel at the new works. This is the longest canal known on the island, and may be up to 90 percent intact. The diversion dam itself is so distant from the factory complex that it is outside of the estimated estate boundaries. Rather, the diversion dam is located on property associated with Arnos Vale estate on the north side of the river and Mary's Hill estate to the south. Little remains of the dam, and its form was not determined.

Amity Hope Estate

Amity Hope Estate is in the extreme southwestern portion of the study area, within an elevated area characterized by low, rolling hills. The maximum elevation of the estate property is approximately 210 meters above sea level while the minimum is 70 meters above sea level. Very little water is available on the property.

The remains of a single sugar factory complex were identified on Amity Hope Estate. The remains are located on a north-south ranging ridgetop, with a sharp drop to the east and west. Unfortunately, they are on fenced-in private property. Permission to enter the property was not obtained. Interviews with local inhabitants indicate that

the remains of a windmill tower were present on the property, but that a modern house has been built atop them. This was not confirmed. The remainder of the factory complex was not located.

Local residents also reported the presence of at least one burial site on a hilltop 150 meters north of the works. Again, this is private property and permission to enter was not gained. No other information about the burial site or sites is available.

The remains of a functionally unidentified complex of seven buildings that may be associated with Amity Hope Estate are located some 660 meters north of the works area, on a dry hilltop in the extreme northwest corner of the estimated property boundary. The complex has a set of brick steps, indicative of an estate house, and several outbuildings and landscape modifications in association. Most of these are functionally unidentified, and the complex may have been the site of additional activities, and not strictly a residential site.

The Carte Militaire (Anonymous 1784) shows a scattering of structures in the vicinity of the Amity Hope factory complex. No evidence of these structures was found during survey, though they may be located in the unsurveyed area of private property reportedly containing the factory complex.

Arnos Vale Estate

Arnos Vale Estate is sometimes referred to in the documents as John's Hill Estate. A small portion of the estate property jutting to the south abuts the Courland River, but the majority of the estate lies to the north of the river. Three perennial tributaries of the river run through the estate property. The estate is bordered to the northwest by the sea, while its maximum elevation is approximately 150 meters above sea level.

The Arnos Vale factory complex is located in the valley of a small perennial stream in the southern portion of the property. Although the boiling house chimney is still standing, the majority of the intact architectural remains are visible only on the surface. The worm tank is readily apparent, however, and possesses well-rounded corners. The sugar works itself is T-shaped, and had a separate mill house to the south. Virtually all of the crushing hardware is still *in situ*. The mill house sheltered a vertical crushing mill that is flanked by an overshot water wheel to one side and a steam engine with an attached boiler to the other. In the event that the steam engine broke down, water could be used to drive the mill.

An interesting feature of the Arnos Vale factory complex is that the top of the water wheel is higher than the end of the canal that was used to feed it. Although several stanchions that would have supported a sluice-way

are present, getting the water from the proximal end of the canal to the overshot wheel would have required a significant head. It is unlikely that this was the method, since a sharp bend occurs at the end of the canal and the beginning of the tail race. The remains of a water pump that could mechanically raise the head are located adjacent to this junction. The remains of a second boiler nearby suggest that the pump, too, was steam operated.

Although the canal itself is largely destroyed, its path can be traced back up to a dam about 450 meters away on the same stream on which the factory complex is located. The dam, however, is well inside the estimated boundaries of the neighboring estate. The dam is a large one, approximately six meters high by 12 meters wide by 2.5 meters thick at its base, and probably served dual functions as an impoundment dam creating a large water supply and a diversion dam transferring water from the stream bed into the canal. Three outlets are visible in the downstream facade of the dam. The largest allows water to continue its flow into the stream bed, and could be opened to prevent damage to the dam during the rainy season. Immediately to the right on facing the downstream facade is a second smaller outlet, which connects back into the main outlet. When the main outlet was opened, some of the water passing through could be diverted into the canal, allowing the mill to be turned even when stream flow was so great as to

endanger the dam. A third outlet is located on the right side of the downstream face of the dam. Roughly the same size as the second, it was opened to divert water directly into the canal when the dam was acting in its impoundment capacity.

Approximately 300 meters north of the works are the remains of the Arnos Vale estate house. These sit on a high hilltop overlooking a small valley to the east that leads down to the works. The remains consist of two short sections of masonry wall, several brick piers and a set of brick-arched steps. The form of this structure could not be determined due to the presence of dense grasses. No outbuildings were noted, but the Carte Militaire (Anonymous 1784) shows an unlabeled cluster of four buildings on a hilltop on what may be Arnos Vale Estate. This may indicate that an estate house complex is present.

Also present on the Carte Militaire (Anonymous 1784), southeast of the possible estate house complex, is a linear array of four structures. If the hilltop structures identify the location of the estate house, then these may represent the estate village. Extensive surface inspection of the length of the valley floor to the east of the estate house and the ridges on either side revealed no evidence of a village in these locations, however.

Arnos Vale Bay, in the southern portion of the estate, is mentioned by Young (1812a:93-94) as being a shipping

point from which estate products could be transferred to Scarborough or Plymouth prior to overseas shipment. The foundation of an historic structure is located on the bay. This foundation currently supports a beach bar associated with a luxury hotel. The surrounding area is highly disturbed by additional construction.

Castara Downs Estate

Castara Downs Estate is located in the extreme northeast corner of the study area. Bordered by the sea to the north, it is characterized by extremely steep slopes and fast-flowing streams. The maximum elevation on the estate property is approximately 340 meters above sea level.

Due to the extreme steepness of the terrain and an absence of access routes, little effort was made to locate structures on Castara Downs Estate. However, an estate house is indicated in the southwest corner of the property at the turn of the nineteenth century on a ridge that slopes steeply down to the sea (Stanford's Geographical Establishment 1900). Its presence was verified by field survey. No artifactual materials dating to the period when sugar was produced on the estate were present adjacent to the architectural remains, perhaps due to erosion and continuous reuse through 1900. Alternatively, this structure may post-date sugar production, although the use

of brick in the architecture makes that unlikely. No other structures were found on the estate.

Courland Estate

Courland Estate is one of the three selected for further study. See Chapter 8.

Craig Hall Estate

Craig Hall Estate is located in the hilly eastern portion of the study area. The short southern boundary of the estate is defined by the Courland River, and a tributary of the river roughly bisects the property from north to south, creating some relatively level ground in the southern quarter of the estate.

The sugar factory complex associated with Craig Hall Estate is located in the southern half of the property, adjacent to the perennial stream. The complex is largely destroyed, and its form was not determined. The only readily identifiable remains are those of the wheel pit, indicating a water powered site, and the mill house. Upslope from the wheel pit is a narrow terrace that may identify the location of the canal feeding the wheel. If so, it is high enough to have supported an overshot wheel. The dam itself was not located. Also present, in an area somewhat removed from the factory site, are two rollers for a crushing mill.

Approximately 550 meters north of the Craig Hall factory complex is a hilltop that is the probable location of the estate house. Few remains of the site are visible today. A surface collection during a period of 75 percent surface visibility yielded two brick bats, one sherd of blue transfer-printed whiteware, several ceramic roofing tile fragments, and some green glass. At present, the site is used as a garden, and this activity probably resulted in the removal of any *in situ* structural remains. However, one informant, an elderly gentleman of about 80 who lives about a hundred meters away, remembers going to the hilltop as a child to pick mangos off a tree which is no longer extant. He reports the presence of several brick piers on the site in his childhood, but does not remember a house ever having been there.

Culloden Estate

Culloden Estate is located in the center of the northern part of the study area. The estate is bounded to the north by the sea, and is primarily composed of steeply sloping terrain. A perennial stream runs through the approximate center of the property, while another runs through the northeast corner, creating rolling hills in a limited area. The maximum elevation of the estate is approximately 200 meters above sea level.

A sugar factory complex is located in the northern part of the property in a distinct natural depression adjacent to a very small stream. The power source for this factory is undetermined. Young (1812a:91) notes the presence of a water wheel on the site. Southeast of the factory complex, about 300 meters upstream, are the remains of a low masonry dam. A channel is occasionally visible between the works and the dam, confirming the former presence of a water wheel at the site. Despite a concerted effort, however, no remains of such a structure were encountered.

The sugar works itself is unique among those known on the island. Rather than being T- or L-shaped, the factory buildings form a rough square. In addition, the chimney associated with the boiling house is built of coral rather than the more typical brick.

The Culloden estate house was located some 275 meters northwest of the factory complex, on a hilltop overlooking the sea. The remains are nearly obscured by a modern habitation, and the original layout of the estate house was not determined. Only masonry remains are present, possibly a cistern for water storage. The main part of the estate house was probably on the current site of the modern structure.

Dunvegan and Providence Estates

Along with Providence Estate, Dunvegan Estate shares lot 10. The border between the two estates is not clearly defined in the historical record. Based on verbal information and the location of known archaeological remains, it is probable that the boundary between the estates bisects lot 10 on an east-west line. However, because the boundary is unclear, all remains in lot 10 will be described herein.

Lot 10 is a well-watered area of steep hillsides. The maximum elevation in the lot is about 200 meters above sea level in the northeast corner, while the minimum elevation is about 20 meters above sea level. The northwest edge of the lot is defined by a short stretch of the Courland river, while the Courland's largest tributary, the Providence River, roughly bisects the lot from east to west.

A sugar factory complex is sited on the south side of the Providence River, approximately in the center of the lot. Local informants note that this complex is associated with Providence Estate. The most spectacular feature of the complex is a river-spanning triple-arched aqueduct of stone and brick, approximately 10 to 15 meters high by 15 to 20 meters across, which transferred water from two canals on the north side of the river to an overshot water wheel on the south. The wheel itself is no longer extant, although

the wheel pit is intact, as is most of an attached, two-story mill house.

The T-shaped sugar works is detached from the wheel pit and mill house. Although the boiling house has been largely destroyed by continued reuse as a sugar manufacturing site until 1991 (Eubanks, personal communication), the curing house and still house are mostly intact. In addition, McTear (n.d.) provides a plan view of the factory drawn between 1825 and 1830 (see Figure 6-1).

The Providence water wheel was fed by two canals which intersect on the north side of the Providence River, opposite the factory complex. One of these canals runs up the north side of the Providence River to a diversion dam at the base of a falls some 700 meters upstream. The second canal runs up the east side of a small tributary that feeds into the Providence just downstream from the factory complex. Due to time constraints, it was not feasible to locate the dam for the second canal.

The Providence estate house was not definitively located, and is probably wholly destroyed. The most likely site of the estate house is on a low hilltop immediately overlooking the factory complex to the west. This location may be depicted on the Carte Militaire (Anonymous 1784), though the map is too crude to be positive. The hilltop is currently the site of a modern habitation. A stockpile of

eighteenth and nineteenth century brick is on the property, though no *in situ* structural remains were located.

Nor was the Providence estate village located. Based on the Carte Militaire (Anonymous 1784), small houses were scattered in the area just south and west of the works, and along the small tributary to the north. Due to heavy vegetation, these locations were not verified by field study.

An historic structure is located at the junction of Providence and Dunvegan Roads some 800 meters south of the Providence factory complex, on what may have been Dunvegan property. The structure has been partially restored and partially renovated, and is currently occupied as a residence. Evidence of its historic origins include eighteenth and nineteenth century brick piers incorporated into the ground floor, the remains of an iron boiler or water tank, and the possible base of a brick chimney. Whether this site was originally residential, industrial or both is unclear.

Several informants placed the Dunvegan sugar factory complex at the end of a ridge extending northward from Dunvegan Road. A church-associated recreation hall was under construction on this site during the period in which fieldwork was being conducted. No archaeological evidence of the factory complex was located. Surficial evidence of

it has likely been destroyed by modern construction, possibly of the recreation hall itself.

Franklyn's Estate

Franklyn's Estate is located in the center of the study area and is dominated by low, steep hills. The southern and eastern boundaries of the estate are formed by the Courland River. The elevation of the estate ranges from a low of 10 meters above sea level to a high of over 100 meters above sea level.

The Franklyn's sugar factory complex is in very poor condition. It is located on a steep tributary of the Courland River coursing down a very narrow valley. The lack of suitable terrain for building dictated that the distillery be sited some 50 meters downstream from the boiling house and curing house. The power for the site was derived from a steam engine. Young (1809:94) places this type of power source at the site as early as 1807, making it one of the first steam engines on the island and in the Caribbean as a whole (Deerr 1950:553). No hardware associated with an engine is present. However, the brick structure that would have partially supported and partially housed the device is recognizable.

The Franklyn's estate house is located on a hilltop approximately 250 meters southeast of the factory complex. The house is still occupied, and has been extensively

modified. Two tombs reportedly exist on the estate house grounds, although these were not visited because they were on private, fenced-in property.

Golden Lane Estate

Golden Lane is a small estate located in the north-central portion of the study area. The estate is characterized by high steep hills and little running water. The maximum elevation of the estate property is 275 meters above sea level while the minimum elevation is 130 meters above sea level.

No evidence of the Golden Lane estate house was located, although the sugar factory complex was found on a high saddle and in the valley of a small, unnamed intermittent stream. This is the site of the modern village of Mt. Thomas, a later name for the estate, the construction of which has largely destroyed the works in the valley itself. The power source for the complex was a cattle mill, located on the saddle approximately 110 meters south of the works. Most of the mill structure is obscured under the junction of the Culloden and Golden Lane-to-Moriah Roads. About a quarter of the exterior wall of the donut-shaped structure that supported the cattle driving the mill is visible on the northwest side of the road.

Also present at Golden Lane Estate is a well, about 50 meters downstream from the works. According to local

informants, the well was a principal source of drinking water for Mt. Thomas residents until its use was superseded by piped-in water in the 1980s.

Although no other remains associated with Golden Lane were encountered, the estate is the setting of a Tobago folktale. The tale presents the legend of "Gang Gang Sarie," an African woman who flew to Tobago in the late eighteenth century to find Tom, her betrothed, who was transported to Tobago at an earlier date by more traditional means. When Gang Gang Sarie was an old woman and her husband Tom had died, she decided to fly back to Africa. Not realizing that, because she had eaten salt, she had lost the ability to fly, she fell from the silk cotton tree she had climbed for her take-off and died shortly afterward. Legend has it that she and Tom are buried side-by-side in a cemetery that still exists today, in graves marked by tombstones inscribed with their names. Fifteen additional stones marking slave burials are reported to be present as well, as is the tomb of the estate owner of the time, "Grandfather Peter." The tomb is said to be located adjacent to the remains of the estate house, while the stones of the slaves are reportedly placed in four distinct groups around what was then a marketplace (Bessom 1989:34; Ottley 1962:24-26).

Unfortunately, I did not come across this tale until after I had returned to the United States. As a result, I

was unable to confirm most of the places and things described. However, a large silk cotton tree, known throughout Tobago, is present in the valley below the Golden Lane sugar factory. A crude sign, placed by the residents of Mount Thomas, marks the tree:

> This silk cotton tree was considered sacred by the African slaves who believed the spirits of their ancestors lived in its branches. Obeah men from all parts of the island came here to perform black magic rituals, he most famous being Bobby Quashie of Culloden. This tree is the largest of its kind on the island and is well known for its many legends, spanning over 150 years....

Highlands Estate

Highlands Estate is located in the south-central portion of the study area. The southern boundary of the estate is formed by the Courland River, where it cuts through a deeply incised valley. A good-sized perennial stream bisects the eastern half of the estate, creating a broad, relatively flat area along part of its course. Several other perennial and intermittent streams are also present. The minimum elevation of the property is approximately 50 meters above sea level in the southwestern corner, and ranges above 250 meters above sea level in the north.

The Highlands sugar factory complex is located on the west bank of the major perennial stream, about 600 meters upstream of its juncture with the Courland River. Much sugar-making hardware is present at the site. The complex

was powered by an overshot water wheel, on the remains of which can be read "W & A McOnie & Co. Glasgow 1856." Three rollers from a vertical mill are also present, as is the mill frame. Finally, fragments of a copper or coppers and the chimney flue door are present.

The works are constructed in a linear fashion. Although the boiling house is preserved only at the ground level, the jamaica train is identifiable along the downslope wall. The curing house and still house walls are preserved to a height of about two meters, and were dug into the ground about three quarters of that depth, making their bases 1.5 meters lower than the boiling house floor. A worm tank is visible at the far end of the complex. Approximately 250 and 400 meters upstream from the works respectively are the remains of a diversion dam and an impoundment dam.

Little evidence of the Highlands estate house remains. According to a local informant, it was located on a hilltop 275 meters northeast of the works. Examination of the indicated area revealed a single copper and a fragmentary brick pier. The house that formerly occupied the site was destroyed by Hurricane Flora in 1963.

Indian Walk Estate

Indian Walk Estate is located in the north-central portion of the study area in a locale dominated by the

western terminus of the main ridge and characterized by rolling hills. Few running streams are on the property, whose maximum and minimum elevations are 275 and 165 meters above sea level respectively.

Some question about the accuracy of the estimated estate borders is raised by the location of the Indian Walk sugar factory complex, which exists outside of the extreme southeastern corner of the estate. The site is located in a valley, on the south side of a small, intermittent stream. Due to heavy undergrowth and the poor physical condition of the site, the form of the works was not ascertained. The power source is also unknown. Steam is the most likely source, but modern construction on the ridge overlooking the works may have obscured a now-destroyed windmill tower. Young (1812a:91) notes that no water wheel was present at the site.

At least two brick-arched bridges cross the stream on which the works is located. On the north side of the stream is a series of 10 truncated brick piers that may have formed a bagas shed. Alternatively, but less likely due to their proximity to the factory complex, these piers may be the remains of an estate house. No other architectural features dating to the eighteenth and nineteenth centuries were located. However, a large abandoned house of modern construction is present on the hilltop immediately to the south of the works. This may be the location of the estate

house, now modified beyond recognition or completely rebuilt.

King Peter's Estate

Located in the northeast corner of the study area, King Peter's estate is bordered to the west by the sea. The estate is characterized by very steep slopes and a precipitous drop to the sea. Only one perennial stream crosses the property, on an east-west axis.

The sugar factory complex associated with King Peter's Estate is located almost on the beach of Anse Flamenco Bay, and is one of the smallest on the island. The walls of the boiling house are preserved almost completely, and show evidence of extensive modification. With the exception of a worm tank, no other buildings normally associated with a works were found.

According to Young (1809:94), the power source for the King Peter's crushing mill was steam in 1807, making it, along with Franklyn's Estate, one of the first estates to adopt steam power on the island. These are the only two steam powered mills noted by Young. The location of the mill and steam engine is defined by two brick piers, approximately three meters in height, 50 meters inland from the works. An artificially constructed yard area exists just to the south of the piers.

No structural remains of an estate house were identified. However, one pearlware and one whiteware sherd were surface collected on a high hilltop 800 meters southeast of and 275 meters higher than the factory complex. An extremely steep, abandoned road leads directly from this point to the works. The hills to the north of the works were not examined due to inaccessibility.

Les Coteaux Estate

Les Coteaux Estate is one of the three selected for further study. See Chapter 8.

Lower Quarter Estate

Lower Quarter Estate, also known as Roselle, is situated in the southwestern portion of the study area. The terrain is transitional between the coral lowlands to the west and south and the more hilly country to the northeast. The maximum and minimum elevations of the property are 205 meters above sea level at Mary's Hill in the southeastern corner and 7.5 meters above sea level along the Courland River, which forms the northern boundary of the estate. In addition to the river, three perennial streams cross the property.

Two sugar factory complexes were located on Lower Quarter Estate. Based on construction and preservational differences, and confirmed by the Carte Militaire (Anonymous

1784), the older one is located on a spur in the east-central portion of the property. Nearly completely destroyed, the old factory complex is represented by the partial base of a windmill tower and, downslope, a surface scatter of masonry rubble. The layout of the complex was not determined.

The newer factory is located approximately 400 meters to the west, on a spur overlooking the largest perennial stream on the estate. This complex is known as Ogilvie (Archie Halifax, personal communication), and is in an excellent state of architectural preservation. Two power sources were available to the operators. At the southern end of the works is a boiler and a foundation that would have housed and supported a steam engine. None of the engine parts were noted. Upslope from the factory, less than 50 meters away, is a very large wheel pit. Its size indicates that it probably housed a breastshot wheel.

The factory buildings are arrayed in a linear fashion, and the structures are preserved to a height of up to five meters. The architectural features that make these buildings look more recent include a worm tank with sharper interior corners than is the norm and walls that were constructed with an attempt to make all stones flush.

Two possible estate house locations were identified on the estate, and it is possible that two existed. Approximately 125 meters east of the old works is an

overlooking hilltop that would have been an ideal location. Although no structural or artifactual remains were encountered, the hilltop shows signs of topographic modification. The Carte Militaire (Anonymous 1784) indicates a large structure in this approximate site. An artificially constructed depression is visible that may indicate the former location of the estate house. A second possible location is on a hilltop overlooking the new factory some 250 meters to the southwest. Whiteware, green glass and a few bricks and brick bats, as well as remains associated with an early twentieth century structure, were surface collected from the site.

No evidence of an estate village was located. However, the Carte Militaire (Anonymous 1784) indicates that it may have been between the old works and the possible estate house location on the hill overlooking the old works.

Mary's Hill Estate

Mary's Hill Estate is adjacent to Lower Quarter to the west, and occupies a similar topographic situation. The northern portion of Mary's Hill is composed of terrain sloping steeply down to the Courland River. The central portion is occupied by rolling hills flanking the valley of the Little Courland River. The southern portion rises to an area of relatively high hills to the south. The maximum elevation of Mary's Hill is 200 meters above sea level in

the southwest corner, while the minimum is 10 to 12 meters above sea level along the Courland River to the north.

The remains of the Mary's Hill sugar factory complex were destroyed in 1992 by heavy equipment. A few scattered chunks of stone masonry mark its location just south of the Little Courland River. An impoundment and diversion dam is located some 50 meters upstream from the factory, indicating that it may have been water powered. This is not confirmed by Young, however (1812a:91). An alternative or earlier power source may have been wind. The hexagonal base of a windmill tower is located on a hilltop a little less than 200 meters to the southwest. A sugar works may have existed on this hilltop location adjacent to the windmill tower base at some point, but no surficial remains of it are present today.

The remains of the Mary's Hill estate house are located 120 meters southwest of the works on an overlooking hillside. These consist of a series of brick piers standing up to two meters in height. The site is covered by dense vegetation, and the layout of the estate house was not determined. A structure appears in this location on the 1:10,000 series maps (DOS 1962). The house may have been destroyed by Hurricane Flora in 1963 though no local informants could confirm this.

The Carte Militaire (Anonymous 1784) shows Mary's Hill Estate. It depicts the factory complex and the estate house

in roughly the positions I have indicated. It also depicts a series of small structures running around both sides of the hill on which the estate house is located. These probably represent the estate village. Due to dense vegetation and leaf litter, no evidence of this village was encountered on the surface. Because the area has been undercut by road construction and is located on a steep slope subject to erosion, no sub-surface testing was undertaken.

Mt. Dillon Estate

Mt. Dillon Estate is located at the southwestern terminus of the main ridge in an area of extreme relief in the northeastern corner of the study area. Although the area is drained by the headwaters of the Coffee, Mt. Dillon and Castara Downs Rivers, three of the short, steep rivers that drain the north side of the island, surface water is scarce. The minimum and maximum elevations of the estate are 160 and 500 meters above sea level respectively.

Several tracks and roads crossing the property are shown on the 1:10,000 series maps (DOS 1962). Due to the extreme relief, and in the belief that estate remains would be associated with the transportation infrastructure, surface survey was limited to these features where they are still intact. Although surface visibility on the road and

track surfaces was good, no archaeological remains were encountered.

Orange Hill Estate

Orange Hill Estate is one of the three selected for further study. See Chapter 8.

Providence Estate

See Dunvegan and Providence Estates, discussed above.

Runnemede Estate

Runnemede Estate is located in the steeply sloping southwestern terminus of the main ridge, at the eastern end of the study area. Several small streams cross the property, and the eastern boundary is formed by the Courland River, more of a stream here near its headwaters. The highest elevation on the property is above 375 meters above sea level in the northeast corner, while the minimum is roughly 175 meters above sea level along the river.

Two sugar factory complexes were encountered on the estate. The first, designated Runnemede old works based on preservational, construction and toponymic features, is located adjacent to the Courland River. A wheel pit is present. Based on the height of the canal above it, the pit housed an overshot wheel. The canal runs for approximately half a kilometer along the west side of the river, to where

a diversion and impoundment dam is located. A brick mill pad is adjacent to the water wheel. Its size, 1.5 meters by three meters, indicates that it supported a vertical crushing mill.

Runnemede old works is an L-shaped complex, small when compared to other works in the study area. Although two walls of the boiling house remain standing, the location of the boiling train is obscured by rubble. The outline of the combination curing and still house is apparent, and the worm tank is still extant, although it has been severely impacted by the roots of several large trees growing from the tops of its walls. No hardware is present at the site.

Runnemede new works is located approximately 650 meters to the west, on a small tributary of the Courland River. The works was steam powered, and virtually all of the engine, the gears and a large flywheel are <u>in situ</u>. The layout is nearly identical to that of the Boulton and Watt mill illustrated in plan and cross-section by Deerr (1950:554-555). As many as 148 Boulton and Watt mills were built between 1802 and 1852. At least one was shipped to Tobago (Deerr 1950:552-553). Although the horizontal crushing mill has fallen through its foundation, it, too, is largely intact.

Aside from the presence of the steam engine, many design features make this a significant site. First, rather than constructing the damper openings beneath the coppers

out of brick in the form of an arch, as was done at all other known works, the Runnemede new works openings were supported by cast iron devices. Second, the corners of the worm tank, similar to those at the Ogilvie works, are significantly less rounded than is the norm. Finally, a multi-chambered piece of machinery is present in the remains of the boiling house. Benjamin's description of the machinery used in the Julius Robert diffusion process is much more cogent: "A series of tall cylinders connected by pipes... filled with thinly-sliced canes and water" (1880:840). The canes and water are steam heated in the cylinders to approximately 190º making the sugar diffuse from the canes into the water. Hydraulic pressure caused by the process forces the resultant sugar rich solution from the processor into a receiving pan and muscovado sugar is rendered by the usual boiling process (Benjamin 1880:840). Although identification of the remains in the Runnemede new works as a diffusion processor is not secure, their position adjacent to the steam engine and the matching description offered by Benjamin argue strongly for such an interpretation.

The Runnemede Estate house was not definitively located, although the most likely location is 900 meters northwest of the new works, on a high hilltop overlooking the sea. Brick supports for a cast iron water tank were found on this site, as were small portions of an <u>in situ</u>

masonry foundation protruding from beneath a modern house. The latter structure has mostly obscured the site.

A single tomb was located on a prominent hilltop just south of the impoundment and diversion dam. Although the dates were unreadable, the name Christopher William Irvine is visible on a slate slab (Ms. Jesma MacFarlane, personal communication) supported by four pillars marking the tomb. Irvine owned the estate in 1811 (Young 1812a:91), and was alive at least as late as 1827 when he was a member of the Tobago House of Assembly. The entire tomb is surrounded by intact walls of coral, approximately one and a half meters high.

Whim Estate

Whim Estate is located at the southern end of the study area. The northern boundary of the estate is formed by the Courland River, although surface water within the estate bounds is scarce. Similar to Mary's Hill to the west, Whim's topography is characterized by steep slopes leading down to the river in the north and by a central high ridge. To the south, the terrain is composed of rolling hills. The maximum elevation on the estate is 160 meters above sea level along the central ridge. The minimum is 15 meters above sea level on the Courland River.

The Whim sugar factory complex is located on a low, gently sloping hilltop in the southern part of the estate,

and has been extensively disturbed by modern house construction. Although the layout of the works was not determined, the Whim mill was wind powered. The circular base of a masonry windmill tower is located less than 50 meters east of the works buildings. It has been incorporated into a new house, and may have been truncated by the modern construction. Young (1812a), however, depicts a windmill associated with Whim Estate, in approximately this position, in one of the series of watercolors that illustrate his manuscripts. In the watercolor, only the base of the structure is of stone. The upper works, supporting the sails, are of wood. In the right foreground, a structure associated with the works is identifiable.

The background of the same watercolor shows the Whim estate house and village. The house is located on a prominent hilltop, while the village is on the hill slopes between the house and the works. Field verification reveals that the watercolor was painted facing northeast. The estate house was on the hilltop a little more than 400 meters away from the factory, while the village was below the house, along the drive. This area has been extensively disturbed by heavy equipment, and no <u>in situ</u> remains were located on the hill or its slopes. A light surface scatter of rubble and mid eighteenth to early nineteenth century ceramics was noted at the site of the estate house.

The Whim complex is also depicted on the Carte Militaire (Anonymous 1784). In this depiction, however, the estate house is not shown, and the estate village consists of scattered houses to the southwest of the works. The presence of a modern village in this area precluded confirmation of this layout in the field.

Woodlands Estate

Woodlands Estate is located in the north-central part of the study area characterized by high hills and steeply sloping terrain. Although the headwaters of several streams are on the property, none carries a significant amount of water at this elevation, which approaches 275 meters above sea level in some areas. In the northwest corner of the property, 225 meters from the coast, the elevation is less than five meters above sea level.

The Woodlands sugar works is completely gone today, replaced by a village cricket pitch. All that marks its former location is a small brick and masonry dam in the bed of a small stream feeding the Courland River and a single cane roller from a crushing mill. According to the Stanford's Geographical Establishment (1900) map of Tobago, a works existed on the flat area immediately to the north of the dam at the time the map was made. This was confirmed by a local informant, who played in the ruins as a child in the 1960s. An older informant remembers getting wet sugar from

the works prior to the 1940s. High on a saddle overlooking the works site are the truncated remains of a circular windmill tower. The remains are approximately 200 meters east of the factory site.

The Woodlands estate house is on a high hilltop overlooking both the sea and the works site. The crest of the hilltop, which is 250 meters northwest of the works site, has been artificially flattened to support construction. At least two well-preserved but heavily overgrown concrete foundations are visible there, the larger of which supported the wooden estate house. The house was destroyed by Hurricane Flora in 1963. An apiary exists on the site today, making intensive survey painfully difficult. As a result, the layout of the house was not determined.

Additional Structures

The remains of at least two masonry foundations are located adjacent to the beach at King Peter's Bay, in the north-central part of the study area. This property was not claimed by any plantation. Young (1812a:93-94) identifies a shipping point on this bay, and the foundations represent warehousing for plantation products prior to their being shipped to Scarborough and Plymouth for taxation and export. Roads or traces lead directly from King Peter's Bay to King Peter's Estate, Runnemede Estate and Woodlands Estate. It is likely that these were the bay's principal users.

An island at the mouth of the Courland River was been tentatively identified as Belle Isle by a local amateur historian. Belle Isle is listed by Woodcock (1866:Appendix 7) as being in St. David's Parish. The island is created by seasonal shifts in the river mouth location. During periods of very high run-off, the river flows directly to the sea along the southern border of the plot. During more ordinary periods, however, a meander is created along the eastern and northern borders.

Belle Isle contains the remains of two circular lime kilns, each measuring roughly four meters in diameter. These supplied raw material for the manufacture of mortar used in the construction of estate buildings. The kilns are located just off the active beach within 20 meters of each other, at the northwestern tip of the island.

Approximately 100 meters south of the kilns, also just off the beach, are the truncated remains of several brick piers and a brick foundation. Built on a much smaller scale than estate houses, these ruins probably mark the site of the property owner's residence. Within the study area it is unique, being the only probable artisan's residence identified. It is similar in size and layout to the several nineteenth century residences in Plymouth that have been preserved. The owner of Belle Isle is identified by Woodcock at the time of his writing as T. Macfarlane

(1866:Appendix 7). No other mention of Belle Isle was encountered in the documents.

Summary of Regional Survey

Twenty-two sugar estates existed in the study area in 1811, covering an average area of 384 acres. These estates produced an average of 136 hogsheads of sugar and 94 puncheons of rum using 179 slaves. Twelve of the estate owners lived on the island, while ten of the estates had absentee owners (Young 1812a:91--see Table 7-3).

Remains were encountered on 21 of the 22 sugar estates in the study area. These included 22 factory complexes incorporating the functionally identified remains of 10 windmill towers, eight water wheels or wheel pits, five steam engines, and one cattle mill. Also identified were 16 estate houses and four estate villages. In several cases, only a tentative identification was made. These include one probable steam engine, two probable estate houses and six probable estate villages. Finally, five additional structures were identified including two coastal warehouses that served as shipping points for sugar, rum and molasses from the interior estates, two lime kilns and a residential structure associated with the lime kilns.

The sugar factories encountered during the survey were laid out in a variety of ways including in the shape of an "L" or a "T," linearly, and as a square. Four sugar

factories were discontiguous. With one exception (Courland Estate, discussed in Chapter 8), all factories were located adjacent to a water source sufficient to provide water for rum production. As a result, in areas of high topographic relief they are generally confined to valley bottoms or broad vales. In addition, sugar factories were located with an eye towards transport. This was accomplished by being close to the coast or near a road with access to shipping points. In the latter case, because sugar, molasses and rum were hauled in large, heavy quantities, roads were routed so as to minimize climbs between factories and the sea.

In contrast to sugar factories, estate houses tend to be located on elevated landforms. From a functional perspective, such locations gave access to breezes that both cooled and promoted health by limiting the insect population. Estate houses were constructed on elevated, often decorated piers to take further advantage of their locations. An elevated situation also provided a good view of the sugar estate including the factory, and probably the estate village as well, although too few of the latter were located by the survey to firmly establish this fact.

CHAPTER 8
RESULTS OF INTENSIVE SURVEY

Although extensive survey throughout St. David's Parish continued for the duration of fieldwork, greater effort was devoted to three sites, Courland Estate, Les Coteaux Estate and Orange Hill Estate. These sites were singled out for further research based on the availability of historical maps depicting the sites, the integrity of visible architectural features, and the apparent integrity of archaeological deposits. In addition, they utilized the two most popular power sources to drive their crushing mills, wind and water. Each site is discussed at length below. Further information derived from the documentary sources concerning estate ownership, boundaries, production, and population is provided in Tables 7-2 and 7-3 (see Chapter 7).

Courland Estate

Courland (Figure 8-1) is the western-most estate in the study area. Comprised primarily of St. David's Parish lot 1, it also incorporates lots 2 and 41 of St. Patrick's Parish and covers an area of 500 acres (Young 1812a:91). Courland Estate is bordered on the north by the Courland

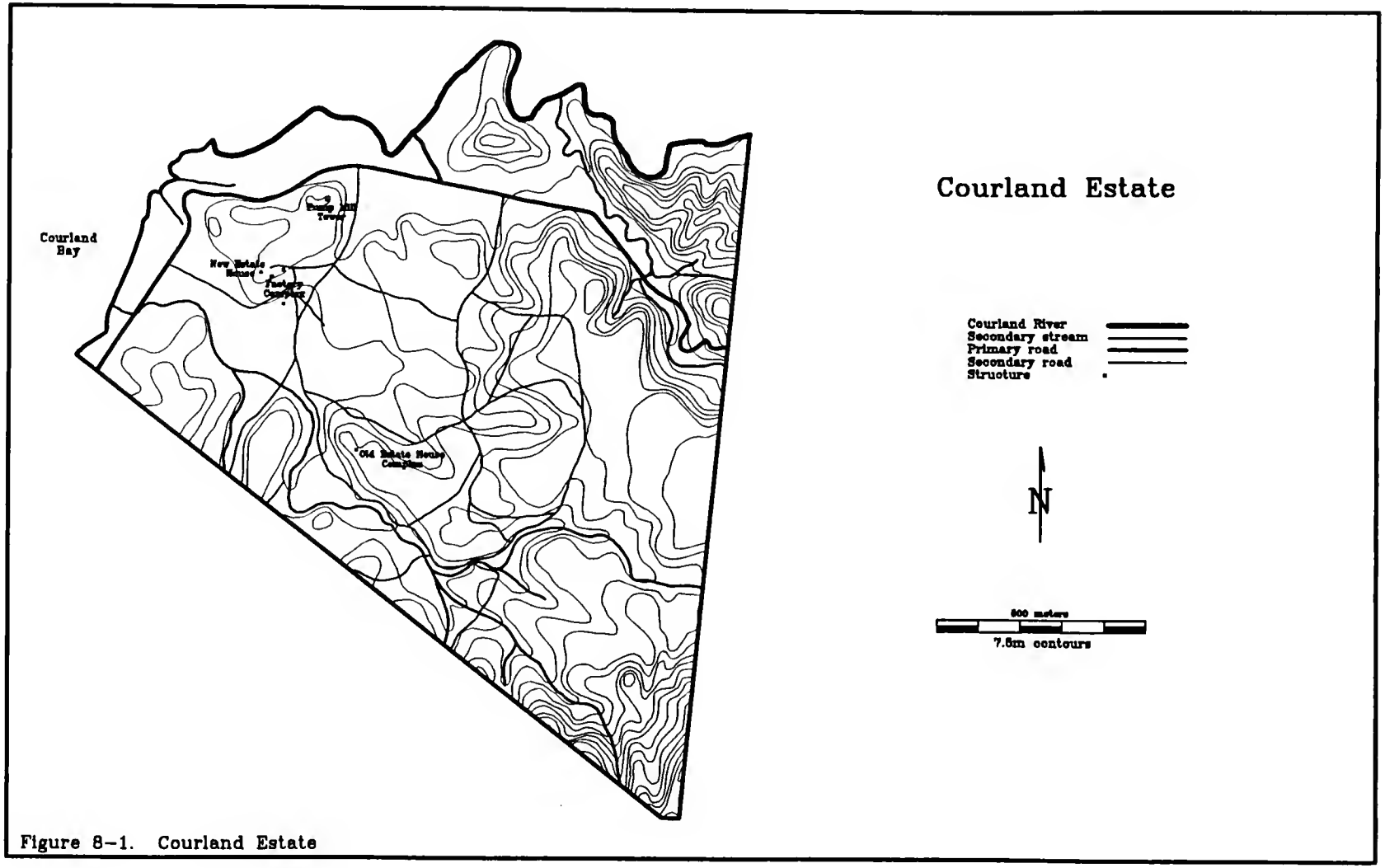

Figure 8-1. Courland Estate

River, on the west by the Caribbean Sea, on the east by Lower Quarter Estate, and on the south by Grafton Estate, part of St. Patrick's Parish. The terrain occupied by Courland Estate consists of low, rolling hills of increasing steepness towards the eastern border of the estate. The maximum elevation on the estate is just over 150 meters above sea level in the extreme southeastern corner. As previously discussed (Chapters 3 and 4), St. David's Parish lot 1, the core of Courland Estate, was the first to be bought at the land sales during Tobago's initial settlement by the British.

Water on Courland Estate is plentiful. In addition to the Courland River forming the northern boundary, two perennial streams cross the property along a southeast-to-northwest axis. The more northerly of the two probably contained the most water historically, as it supported at least one, and possibly two, water wheels during the nineteenth century (see description of Lower Quarter and Mary's Hill Estates, Chapter 7), neither of which was associated with Courland Estate. The southern stream approximately parallels the southern boundary of St. David's Parish lot 1. Although much of the watercourse is dry today, it is spring-fed from a point just inside the lot 1 boundary. Surface water was available at the spring-head even during the height of the 1993 dry season. While

several other watercourses are apparent on the property, none carries significant amounts of water today.

Previous Research

Eubanks (1990, 1992) conducted survey and limited testing at the site of the Courland Estate sugar factory complex, located in the northwest portion of the Estate, in 1989 as part of a development plan for the property. The following description is derived from Eubanks (1992:176-188) and from the Laughlin and Associates (1990) development plan.

The Courland complex contains the remains of three windmill towers, an estate house, the factory itself, and a variety of other structures. Of the windmill towers, two were for crushing cane. One of these has been largely destroyed, and is now reduced to a circular foundation approximately eight meters in diameter. The other windmill tower is somewhat larger, and stands some 80 meters to the west. It has been converted to a residential structure, and has a two story addition extending to the south. A third tower stands approximately 200 meters to the north. Significantly smaller than the other two, this structure housed a wind powered water pump that drew water from the Courland River to supply both the sugar manufacturing process and the residents of the site.

The remains of a second residential structure are located slightly upslope and some 26 meters northwest of the converted windmill tower. The building, probably wooden, was constructed atop piers of brick and cut coral, which are still extant and stand approximately two meters high. The structure is typical of eighteenth and nineteenth century estate houses throughout the island. The dimensions of the structure were approximately 10 by 15 meters (32 by 48 feet). Later renovations are indicated by the presence of an arched stairway and additional piers constructed of concrete. To the back of the structure (ie. to the northwest) is a light scatter of european refined earthenwares.

The final major architectural component of the Courland factory complex is the T-shaped sugar factory itself, located approximately 65 meters south of the converted windmill tower. Encompassing some 2690 square meters (8825 square feet), the Courland sugar factory is the second largest known to exist on the island (Eubanks, personal communication, May 4, 1994) (Figure 8-2). The long axis of the boiling house, oriented roughly northwest-to-southeast and forming the base of the T, measures 27 meters (90 feet) in length and is nine meters (30 feet) wide. While Eubanks (1992:182) hypothesizes that the boiling house could have supported up to two jamaica trains, evidence of only one, in the form of a strike pan known to have existed in the

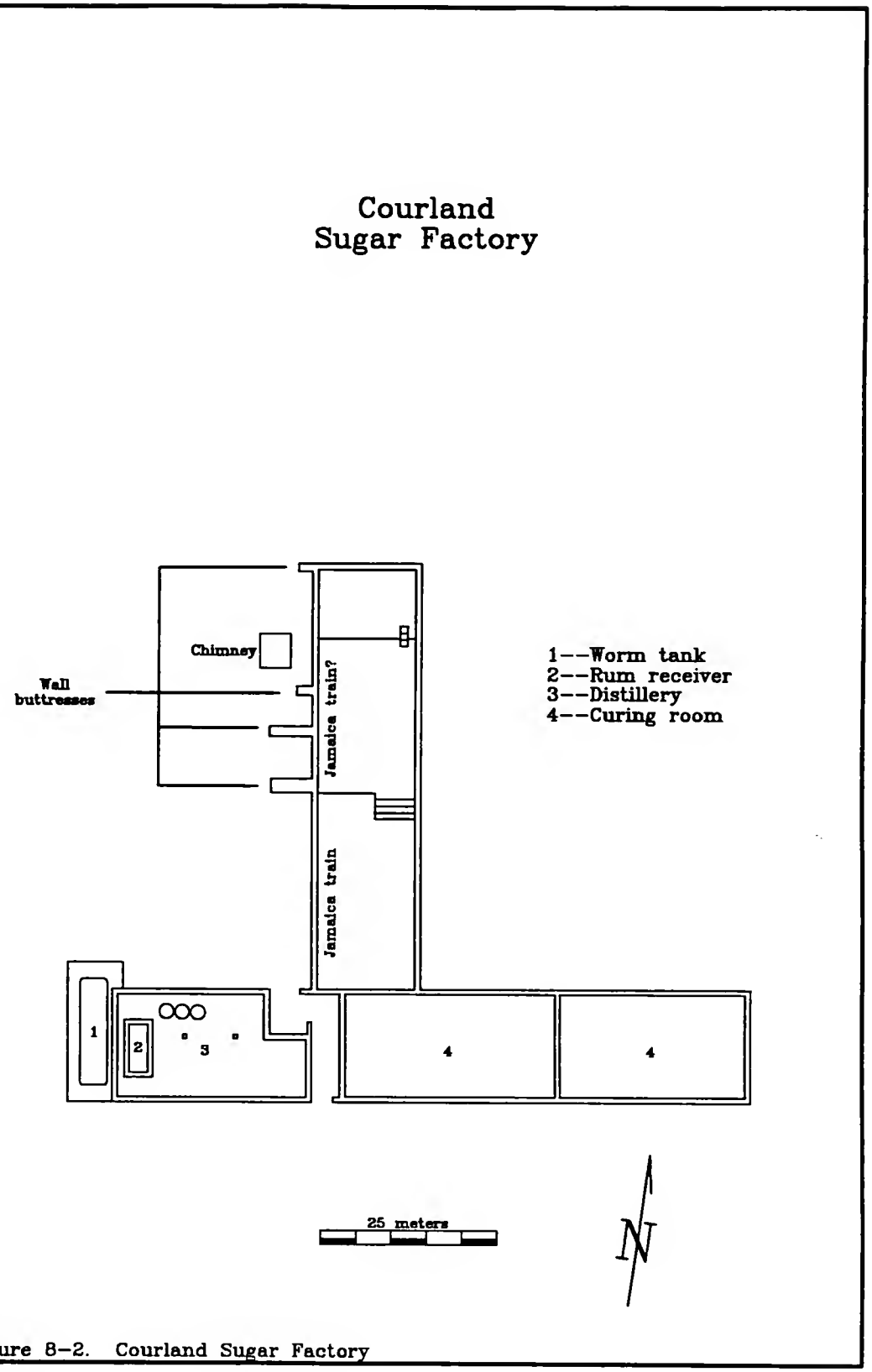

Figure 8-2. Courland Sugar Factory

extreme southwestern corner of the building, is available. Today, much of the western wall along which the train(s) would have run is taken up by a copra drying plant dating to the mid-20th century. A brick chimney, some 10 to 15 meters (approximately 40 feet) tall, stands at the northern end of this wall, on the exterior of the building.

The top of the T-shaped sugar factory, located at the end of the boiling house furthest from the converted windmill, is divided into three rooms of roughly equal size and is one story lower than the boiling house. Together, the three rooms measure 52.5 meters (175 feet) long by 10.5 meters (35 feet) wide. The two rooms at the eastern end formed the curing house while the third room, located at the western end, served as the distillery. Several wall sections in this portion of the structure are preserved to a height of two stories. Three circular concrete pads along the north wall of the distillery room interior supported fermentation vats, while the rum receiver was located at the western end of the room. The wormtank is located at the extreme western end of the structure, and has well-rounded interior corners.

Several other architectural elements related to sugar manufacturing are preserved at the Courland factory complex. Water, pumped from the Courland River by the small windmill to the north of the site for the sugar manufacturing process, probably passed through a small pipe. After

filling a small tank for household use between the two larger windmills, overflow was transferred through a narrow, brick-lined gutter to an angular storage tank midway between the converted windmill and the factory itself. Just east of the water storage tank is a circular, gravity fed clarifying tank for cane juice from the two mills used for grinding cane. To the west of the water storage tank is a bagas dump where crushed cane was dried for later burning in the furnace below the train.

In addition to the architectural elements discussed above, the remains of several functionally unidentified structures are present. Three are located just west of the factory and southwest of the estate house. Eubanks (1992:188) postulates that these may have been residential structures occupied by the slave drivers. A fourth functionally unidentified structure is located south of the factory buildings and close to the spring-fed stream which flows along the southwest border of St. David's Parish lot 1. Finally, the remains of two dams that impounded water in this stream are also extant.

Additional Research

Because it was undertaken as part of a development project, Eubanks' research was limited to the area immediately surrounding the Courland sugar factory complex (Eubanks 1990, 1992). Eubanks was aware, however, that

additional elements existed outside of his study area. This was confirmed by several individuals spoken to by both Eubanks and myself. None, however, could convey more than a vague understanding about where, exactly, these elements were to be found.

As part of the intensive survey of the Courland property, all available maps were consulted for evidence of additional structures. The Carte Militaire (Anonymous 1784) clearly shows eight structures, three of which are circular, in roughly the location identified by Eubanks as the sugar factory complex. In addition, it shows the main road from Scarborough to Plymouth running to the southeast from the complex, a road which is abandoned and overgrown today. The map also depicts many structures somewhat to the southeast of the complex and south of the road. Furthest to the southeast are two large, rectangular structures accessed by a short drive leading off from the Plymouth-Scarborough Road. Just northwest of them, the estate village, consisting of 25 smaller structures, is indicated. The structures of the estate village are arranged in several slightly curved rows oriented roughly parallel with the Plymouth-Scarborough Road.

A surface and subsurface survey utilizing 50 by 50 centimeter test pits, extensive clearing and intensive surface inspection was conducted in the area indicated by the Carte Militaire (Anonymous 1784). The survey

successfully located the elements depicted on the map including the original Plymouth-Scarborough Road, the drive, the brick and masonry foundation remains of 12 structures, a tomb, surface indications of 71 possible features, and domestic refuse dating to the second half of the eighteenth century and the first quarter of the nineteenth century. These remains are situated primarily on a finger ridge located between two now-dry watercourses. Figure 8-3 shows these various elements, which are discussed below. For the purposes of discussion, Figure 8-3 is roughly divided into three areas. Area 1 is defined by the flat upper portion of the finger ridge. Area 2 is defined by the ridgetop as it slopes gently to the northwest. Area 3, bounded by a stream to the south and west and by a narrow, unpaved road to the north, is southwest of Area 2. The original Plymouth-Scarborough Road diverges off of the narrow, unpaved road in the northwestern corner of Figure 8-3, running roughly southwest along the northeast flank of the ridge. Prior to crossing the course of a seasonal stream, a drive, approximately 150 meters in length, skirts the northern edge of Area 2 before terminating in Area 1.

Area 1

Area 1 is located in the southeastern quadrant of the map, and contains the remains of ten structures as well as the tomb. Of the ten structures (labeled 1-10 on Figure 8-

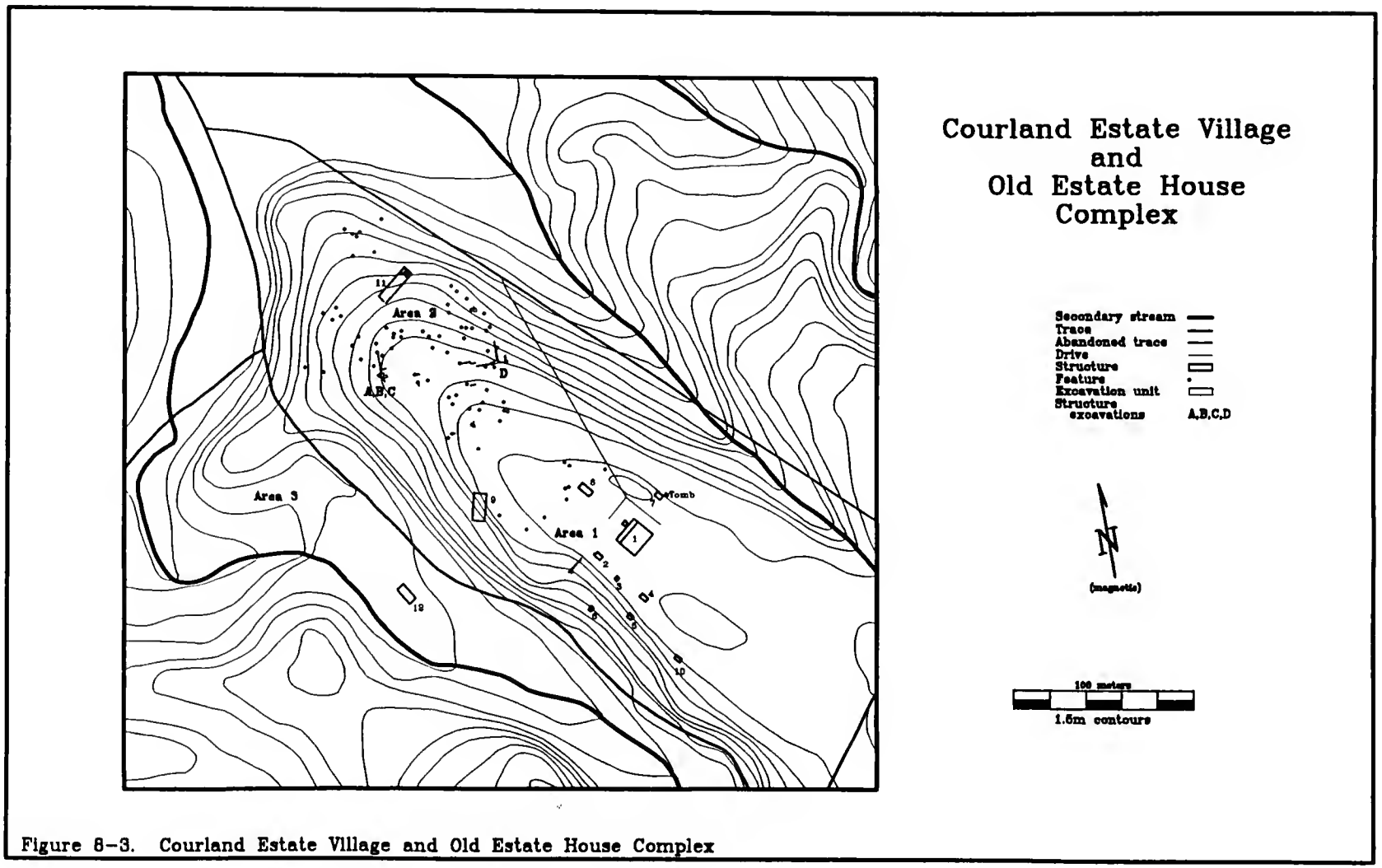

Figure 8-3. Courland Estate Village and Old Estate House Complex

3), eight (numbers 1-8) are oriented to N321ºE, as is the tomb. Structure 1, measuring approximately 16 by 11 meters (54 by 38 feet), is the largest of the structures in Area 1, and is located at the termination of the drive (Figure 8-4). Access to the second story of the structure was gained by a double-arched brick stairway located adjacent to the long northwest wall, indicating that Structure 1 functioned as an estate house. The stairs are offset slightly towards the northern corner of the building, giving the illusion of symmetry to anyone approaching up the drive. The remains of two brick piers flanking the stairway and along the exterior of the northeast wall indicate that a second story porch may have marked the front entrance to the building.

The estate house is unlike others on the island in that it may not have been built atop piers. Rather, much of the structure is defined by a continuous brick foundation. The exception is the northeastern quarter of the building, where brick piers and low masonry walls may have defined an open room giving out onto a brick-paved veranda at ground level on the northeast side. The remainder of the first floor interior, the part defined by continuous foundation walls is at least partially floored with 26 centimeter square limestone or marble tiles, and is divided roughly in half by a brick foundation wall running from the front of the structure to the rear.

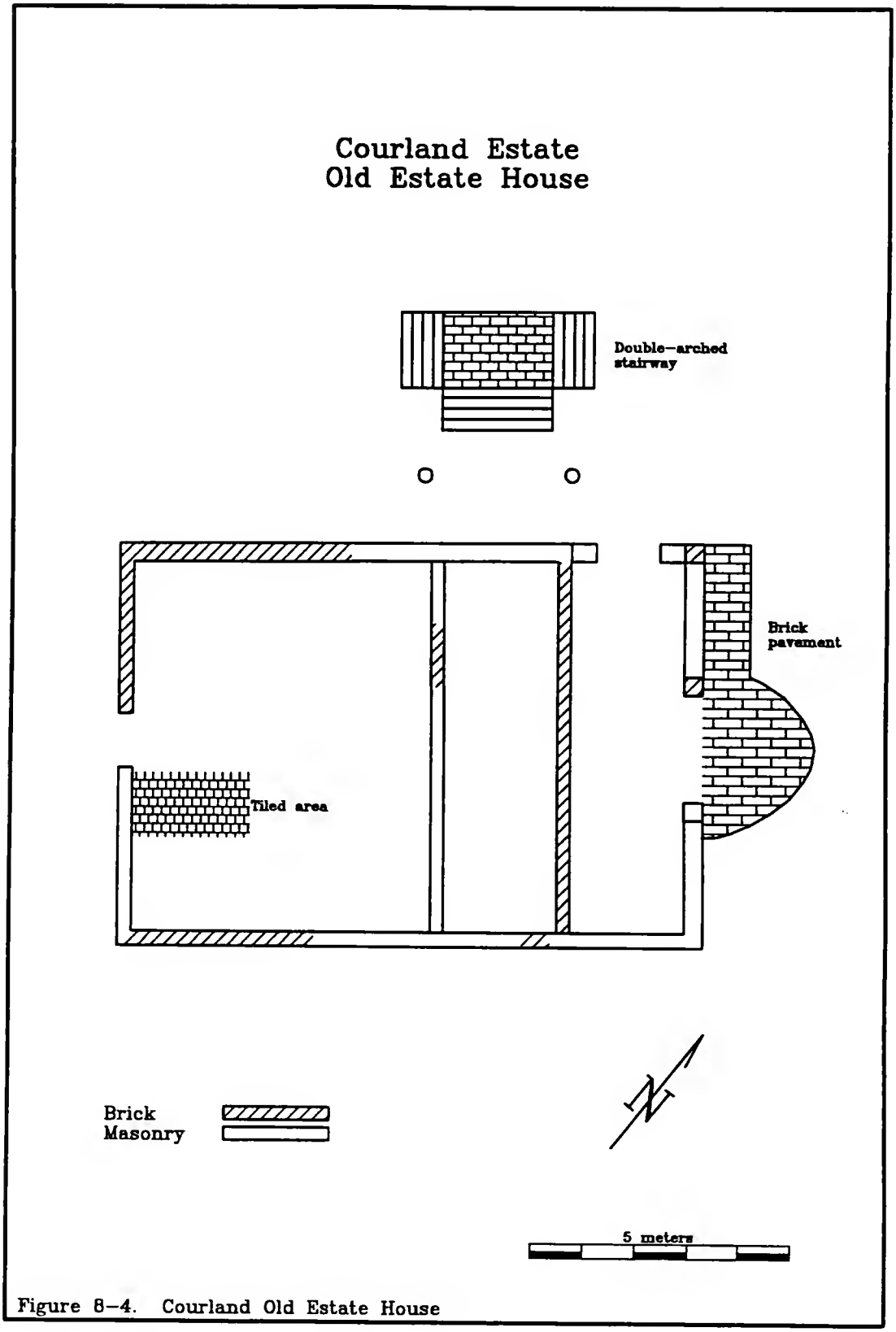

Figure 8-4. Courland Old Estate House

Structure 2 is located approximately 12 meters southwest of the estate house. Although the basal foundation of the structure is constructed of masonry, it is capped by a course of brick at floor level. The entire interior of the building appears to have been floored with brick or red ceramic tiles. A brick rubble pile along the interior of the northwestern wall may indicate the presence of ovens while the base of a brick chimney is present abutting the western corner of the building. Based on its proximity to the estate house, the fire-retardant materials used in its construction, and the possible presence of ovens, Structure 2 is tentatively identified as a kitchen.

The remaining eight structures in Area 1 are functionally unidentified. Structures 3-8 are aligned, like Structures 1 and 2 and the tomb, to a bearing of N321ºE, while Structure 9 is oriented to N194ºE and Structure 10 is oriented to N315ºE. While four of the structures are marked by brick and masonry piers (Structures 5, 6, 8, and 9), the remainder have continuous foundations primarily constructed of stone masonry. Of the latter, one (Structure 3) combines a continuous foundation with brick-and-masonry piers at the corners, rising to a height of approximately two meters. A second (Structure 4) has corners constructed of cut-coral blocks. The dimensions of Structures 3 to 10 range from four by four meters (13 by 13 feet--Structure 3) to 15.5 by 6.75 meters (50 by 22 feet--Structure 9). A small block of

granite, cut on three sides and rough-faced with a hammer and chisel on the others, is located some eight meters southwest of Structure 8.

The tomb in Area 1 is located approximately 25 meters northeast of the estate house. Constructed entirely of brick, it was at one time surrounded by an ornamental wrought iron fence, roughly half of which is still in situ. The upright stone marking the tomb reads:

Sacred
To the memory of
ELIZA MACDOUGAL
second daughter of James McQueen
An affectionate wife
A tender mother
A dutiful daughter
And a kind friend
Who died January 27th 1837
In the 30th year of her age
This stone is erected to her memory
by her afflicted husband
ALEXANDER MACDOUGAL
1837

Portions of three retaining walls are located approximately eight meters southwest of structure 2. The walls run perpendicular to the N321ºE axis of majority of the buildings in Area 1. They indicate that the broad, flat ridge-top to the front of the estate house may have been landscaped as a formal garden.

Area 2

Area 2 is located roughly in the center of Figure 8-3, and contains one masonry structure (Structure 11), with a continuous foundation, measuring 22.25 by 5.9 meters (73 by

19 feet). Like most of the structures in Area 1, Structure 11 is oriented to N321ºE. It was constructed with a pair of tanks in the northeastern end with interior dimensions of three by 1.8 meters (ten by six feet). These may have served as cisterns. A cut coral water filter was recovered from a location approximately 25 meters southeast of Structure 11. A break in the foundation in the southern corner of the structure indicates the location of an entryway.

While Structure 11 is prominent within Area 2, the area is primarily characterized by the presence of many possible features arrayed in a seemingly random pattern. The majority are minimally defined by concentrations of five or more cobbles, bricks and/or ceramic roofing tiles, often accompanied by bottle fragments and other artifacts, visible on the surface within a one square meter area. Sixty-eight such features exist in Area 2.[1] In addition, a rectangular depression measuring approximately four by six meters (13 by 20 feet) was tentatively defined as a feature, while the base of a brick pier and a coral water filter were also located. All features were numbered sequentially.

Forty test pits were excavated at 25 meter intervals within Area 2. The initial research design called for a tighter interval within this, the main portion of the estate

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[1] Nine similar features are located in the northwestern portion of Area 1.

village. Given the descriptions of slave housing on Tobago available in the literature (see Chapter 6), test pits excavated at an interval of 12.5 meters would have intersected approximately 25 percent of the structures within the village area while a 6.25 meter interval would have intersected nearly every structure. However, due to the presence of a large number of surface features within the village and preliminary indications that they represented intact subsurface structural remains, after completion of a 25 meter interval shovel testing was abandoned in favor of a program of trenching and block excavations. At a 25 meter interval, shovel testing had a six percent probability of intersecting structures. As a result, artifact density distribution maps prepared using the data recovered at this interval shed little light on the internal patterning present at the estate village.

Limited excavations were undertaken to expose subsurface remains associated with Area 2. Intact architectural remains were encountered in two instances, at Feature 1 and at Feature 38. Surface indications of Feature 1 included a dense deposit of bricks, brick fragments and angular to sub-angular cobbles in an area of approximately one square meter. Testing at Feature 1 included seven one-by-one meter excavation units and four 50 centimeter wide trenches ranging in length from two to three meters. Foundations associated with two definite structures and one

possible structure were encountered. Designated Structures A, B and C respectively, these are described below (Figure 8-5).[2]

The top of the foundation of Structure A was encountered at a depth of less than five centimeters below surface and extends to a depth of 30 centimeters. The walls of the foundation are constructed primarily of poorly mortared stone, with some bricks and brick fragments included, while the one corner that was exposed is exclusively of brick. The average width of the foundation walls is approximately 15 centimeters, and efforts were made by the builder(s) to create a uniform face on the exterior. The structure itself is quite small, measuring only 1.4 meters (4.6 feet) across by 1.8 meters (5.9 feet) long. This is similar in size to a structure excavated by Armstrong at the Drax Hall Plantation, Jamaica, estate village, a structure that was tentatively identified as a storage shed (Armstrong 1990:112). The long axis of Structure A is oriented to N287ºE. Only three walls are present; the northwest end of the structure was left open.

The foundation associated with Structure B was initially encountered at a depth of 10 centimeters below surface, terminating at a depth of 20 centimeters below surface. The exposed sections of the foundation are

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[2] Given the very small portion of the Structure C foundation exposed by excavation, it is not depicted in Figure 8-5.

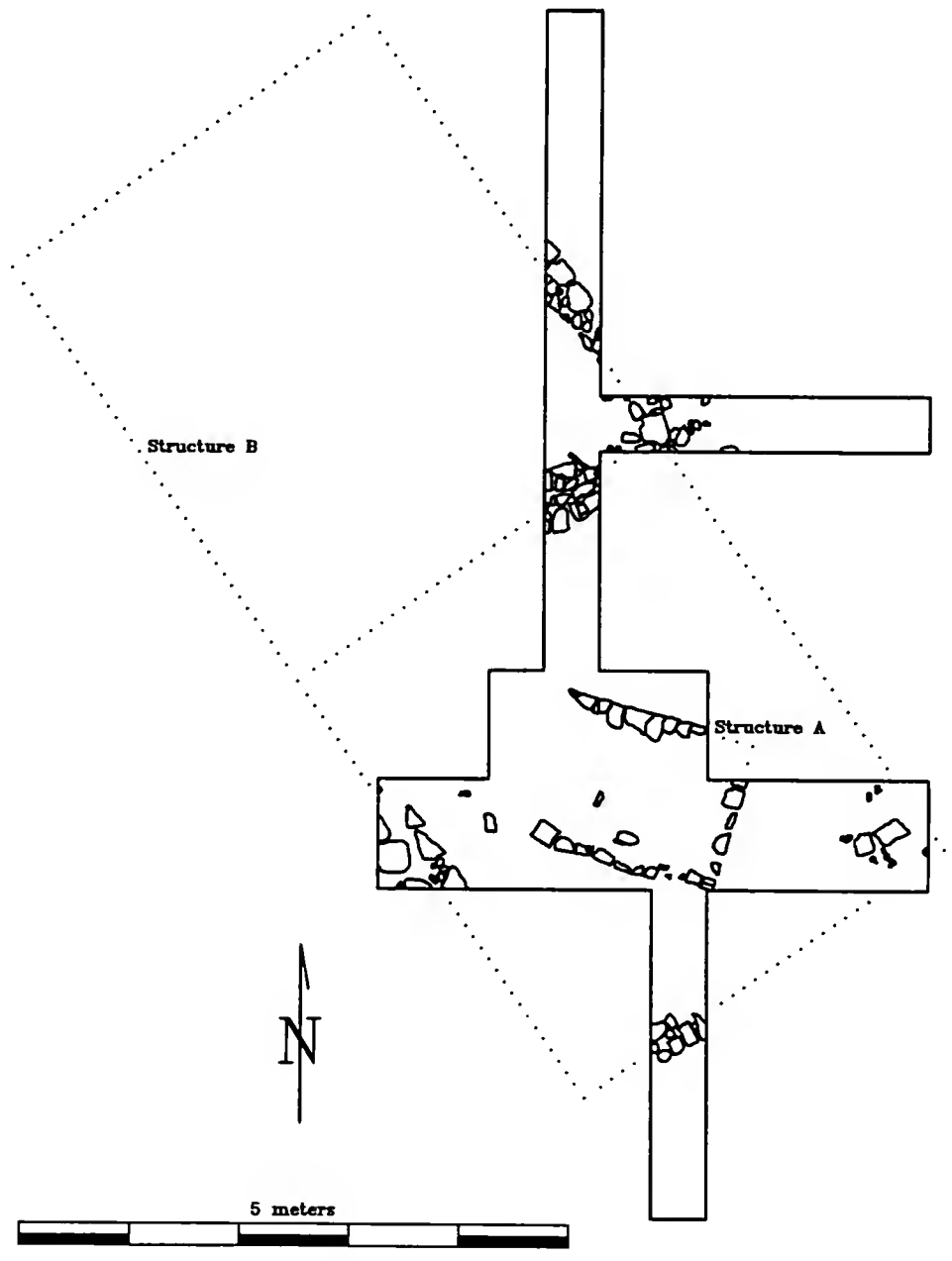

Figure 8–5. Courland Estate Village Structures A and B

composed of brick and angular to sub-angular cobbles. No corners were encountered, and the building material used in their construction is unknown. In conjunction with the partial excavation of Structure B, probing was undertaken to determine the shape and size of the structure. Probing indicates that the foundation measures 9.2 meters by 4.0 meters (30 by 13 feet) and has an interior foundation wall, which was partially exposed by excavation, dividing it into two square rooms of equal size. The exterior walls of the foundation are faced on the outside, while the partitioning wall is double-faced. The downslope (southwest) foundation wall is somewhat more massively constructed than the three upslope walls. The orientation of the long axis of the structure is N320ºE. The remains of Structure B conform well to a description of slave housing provided to Sir William Young in a 1792 visit to the island prior to his Governorship (in Edwards 1819 vol. 3:277-278 and Woodcock 1866:65--see quote, Chapter 6).

The excavated portion of the Structure C foundation extends northward from the north wall of Structure A. Structure C was encountered while attempting to determine the maximum depth of the foundation of Structure A within an excavation unit measuring one meter east-west by 50 centimeters north-south. As a result, only a 50 centimeter long portion of the foundation associated with Structure C was encountered, at a depth of 40 centimeters below surface.

Formed by five rounded to sub-rounded cobbles, the orientation of the exposed portion of the Structure C foundation wall appears to be roughly north-south. Given limited time, the intrusive nature of Structure A and the close proximity of the foundations of both Structure A and B, no attempt to further expose the Structure C foundation was made. The basal depth of Structure C was not determined.

The remains of a possible fourth foundation, Structure D, were located at Feature 38, approximately 65 meters east of Structures A, B and C. On the surface, Feature 38 consisted of several angular to sub-angular cobbles and a green glass bottle-base in an area of less than one square meter. These remains were located adjacent to a small boulder. Structure D was very poorly defined; only one corner and portions of the two adjacent walls were tentatively identified in a 1 by 2 meter excavation unit and two 3 by 0.5 meter trenches. Based on these minimal remains, the orientation of the structure is approximately N312ºE. The overall size of the structure could not be determined by probing.

The subsurface architectural remains encountered in Area 2 indicate that it is the former location of the estate village. The remains are accompanied by many boulders, ranging in approximate size from one cubic meter to 18 to 20 cubic meters. Pulsipher (1992:26) notes that boulders and

large stones are a common feature of estate villages, often used as outdoor "furniture" by the village inhabitants.

Area 2 Artifacts

Shovel testing in Area 2 yielded 677 artifacts. They are divided into architectural, European ceramic, unglazed coarse earthenware, and bottle glass categories.[3]

Architectural remains, including brick, mortar, slate, redware ceramic roofing tiles, window glass, and nails, make up the bulk of the collection (n=195; 28.8%), with brick fragments being the most common (n=101). However, as the soil in the village area was a densely compacted clay loam that required pickaxes to excavate, brick, mortar, slate, roofing tiles, and window glass were subject to unintentional breakage during excavation. A more accurate measurement of the amount of architectural material in the village may be nails and nail fragments. Fifty-seven nails and nail fragments were recovered. With the exception of three, which were unidentifiable, all were square. None were identifiable as to their manufacturing technique (ie. hand wrought or machine cut).

Bottle glass makes up the next largest category of artifact from the village test pits (n=194; 28.8%). Olive

[3] Several additional artifacts which do not fit into any of these categories were also recovered during the test pit survey. These are discussed as a group below, along with similarly uncategorized artifacts from other contexts.

glass predominated (n=93, including 12 neck fragments), followed by dark green glass (n=69, including 2 neck and 1 lip fragment) and clear glass (n=27, including 1 lip fragment). Five fragments of aqua glass were also recovered.

Ceramics of european manufacture occur frequently in the collection (n=150; 22.2%). They are dominated by creamwares of various types (n=77) including plain, feather edged, molded, royal pattern, blue transfer printed, mocha, and green shell edged. Plain creamware is predominant (n=67). Twenty-five pearlware sherds were also recovered. Blue transfer printed pearlware occurs most frequently (n=14), followed by plain pearlware (n=7). Two sherds of hand painted polychrome and one sherd each of annular and blue shell edged pearlware complete the pearlware collection. The next most dominant ceramic type in the collection is whiteware (n=14), dominated by blue transfer printed whiteware (n=6) but including plain (n=2), black transfer printed (n=2), hand painted polychrome (n=2), red hand painted (n=1), and annular (n=1) whitewares. Stonewares occur infrequently in the collection (n=8). They include four white salt-glazed sherds (including two barley patterns), three brown salt-glazed sherds, one scratch blue sherd, and one fragment of a bellarmine.[4] The remaining

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[4] The bellarmine sherd may be a remnant of the early colonization attempts of the Courlanders on Tobago in the vicinity of Courland Bay. No other possible indications of

European ceramics from the test pit survey include black and brown lead-glazed coarse earthenwares (n=7), delfts (n=5), english porcelain (n=2), faience (n=2), cream colored ware (n=1), and plain redware (n=1). Eight sherds of unidentifiable refined earthenware were also recovered.

Twenty-five sherds of unglazed coarse earthenware were recovered during the test pit survey (3.7% of the total assemblage). Most were grit tempered (n=18) while the remainder were sand tempered (n=7). Only one showed evidence of surface decoration, in the form of broad line incising. A randomly selected sample of the coarse earthenware sherds recovered from the test pit survey and from later excavations (discussed below) was analyzed by James B. Petersen of the University of Maine at Farmington Archaeological Research Center. Most of the specimens were small, and few displayed diagnostic traits such as body form, rim shape or surface decoration that would allow their confident definition as either Afro-tobagonian or Amerindian. The sherds are, however, of local manufacture as demonstrated by the use of locally available tempering material including primarily feldspar and quartz. Additional constituents are also of volcanic origin (e.g. magnetite). While only one sherd shows evidence of coil fracturing, it is likely that all were made with this method. Petersen concludes that all of the sherds are most

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this occupation were found.

similar to Saladoid ceramics, dating to some time after 600 A.D. (personal communication).

The artifacts recovered from the test pit survey suggest a mid-to-late eighteenth to early-to-mid-nineteenth century occupation of the Courland estate village. Applying South's (1977:217-218) mean ceramic date formula to the datable European ceramics yields a date of 1811, with occupation brackets of 1775 to 1825. While the earlier date is somewhat later than the settlement of Tobago and thus in keeping with the probable stabilization of settlement at Courland estate, the later date, based on the presence of the tomb dating to 1837 (discussed previously) may be slightly too early. These points are discussed more fully in Chapter 9.

One hundred thirty-six artifacts were associated with the interior of Structure A. Roughly a third of the material was composed of datable European ceramics. Applying South's (1977:217-218) mean ceramic date formula to these ceramics yields a date of 1799, with a terminus post quem of 1795 (transfer-printed pearlware and underglaze polychrome pearlware). Architectural materials, 27.7% of the assemblage, included window glass, square nails and nail fragments, and redware roofing tile. Bottle glass comprised 24.3% of the assemblage, with olive glass predominating. Finally, several additional items were recovered (see footnote 3, above).

With the exception of those contained within the Structure A foundation, it is difficult to attribute the artifacts recovered in this area to individual structures due to the intrusion of Structure B on Structure C and the intrusion on both by Structure A. In addition, the lack of visible soil horizons in the excavations and the similar percentages of artifact types within arbitrary 10 centimeter levels indicate that the area has been extensively disturbed. This results both from natural causes--the soil of the village area is predominantly clay and thus subject to the turbatory effects of wetting and drying--and farming. In general, the artifacts recovered from excavations outside of the Structure A foundation but within and immediately surrounding the Structure B foundation are represented in approximately the same percentages as those encountered during the test pit survey.

The artifacts from Structure D were not fully analyzed due to scheduling problems. South's (1977) mean ceramic date formula applied to the datable European ceramics recovered from the four units in which Structure D was encountered yields a date of 1781. A quarter of a Spanish two <u>real</u> coin was recovered from one of these units. Bearing the crowned arms of Spain on the obverse and the arms of Castile and Leon on the reverse, this coin was minted between 1759 and 1771 (Krause and Mishler 1991:2478). Also present, but not counted during analysis, were olive,

green, clear, and aqua glass, square nails and nail fragments, ceramic roof tile sherds, a small amount of slate, window glass, and two sherds of unglazed coarse earthenware (one sand tempered and one grit tempered) similar to the Saladoid-like ceramics discussed above.

The "Other" category of artifacts alluded to above contains primarily unidentified iron fragments. However, it also contains seven glass beads recovered during excavations at the Courland estate village. Four of these are type If beads (Kidd and Kidd 1970). Using the descriptive categories laid out by Deagan (1987:161) they are simple drawn beads of medium size with faceted surfaces. One (black in color) is opaque, while three (two blue and one red) are translucent.

The remaining beads have not been classified in the Kidd and Kidd system due to the inaccessibility of the seminal publication. One is a simple, opaque light blue, medium sized, nearly round bead with a longitudinal inconsistency that mars its apparent intended shape. Microscopic examination reveals parallel striations which do not align to either axis of the bead. These may indicate that it is wound, though characteristic elongated bubbles perpendicular to the axis of the hole were not apparent (Sprague 1985). A second simple round bead, medium sized and an opaque blue in color, is likely wound, though patina and severe pitting makes this difficult to determine. A

third bead is opaque red in diaphaneity and color. It is cylindrical in shape, wound and measures seven millimeters in length.

An eighth bead, recovered from the interior of Structure A, is also unidentified. It is an opaque white in color, and barrel shaped, measuring 11.5 millimeters in length. Microscopic examination of the bead reveals some grain to the material, suggestive of porcelain. Sprague (1985) points out that some glass beads manufactured by the firing process have a similar consistency and that this method utilizes a compression technique. As the bead exhibits a delicate, impressed floral motif infilled with blue enamel, this is the likely construction technique.

In addition to the beads discussed above, a first model Brown Bess musket side plate fragment (Peterson 1968:28), a shanked gilt Tobago Militia uniform button bearing the Latin motto "Pulchrior Evenit" (She becomes more beautiful), and four metal wafers were recovered from the Courland estate village. Two of the wafers are made of tin, and have no decoration. The other two likely functioned as tokens representing some fixed monetary value. They are made of copper and bear the impressed upper-case letters "TB" above a lower-case "o" or a zero. In addition, the base-and-stem of a thick-walled clear glass goblet was also recovered from the interior of Structure A, as were a bone button-back, two

shanked copper and gilt buttons, and a copper furniture tack.

Area 3

Area 3 is defined by the relatively flat terrain flanking the finger-ridge to the northeast, which contains Areas 1 and 2, and is bounded on the south and west by a spring-fed stream. Eight test pits were excavated in Area 3 at 50 meter intervals. Although all were positive, none yielded the relatively high frequency of artifacts that characterized the test pits in Area 2. Likewise, no possible features were apparent on the surface.

The remains of a single masonry structure with a continuous foundation, designated structure 12, were encountered in the southeastern end of Area 3, below the estate house complex of Area 1. Measuring approximately 10.0 by 4.9 meters (32 by 16 feet), the long axis is oriented to N329ºE. The remains of several hoe blades were reportedly recovered by a local property owner from the stream-bank some 10 to 15 meters southwest of Structure 12.

Les Coteaux Estate

Les Coteaux Estate (Figure 8-6) was the largest estate in St. David's Parish and one of the largest on the island, covering an area of 750 acres in 1811 (Young 1812a:91). It is also the only estate in St. David's Parish partially

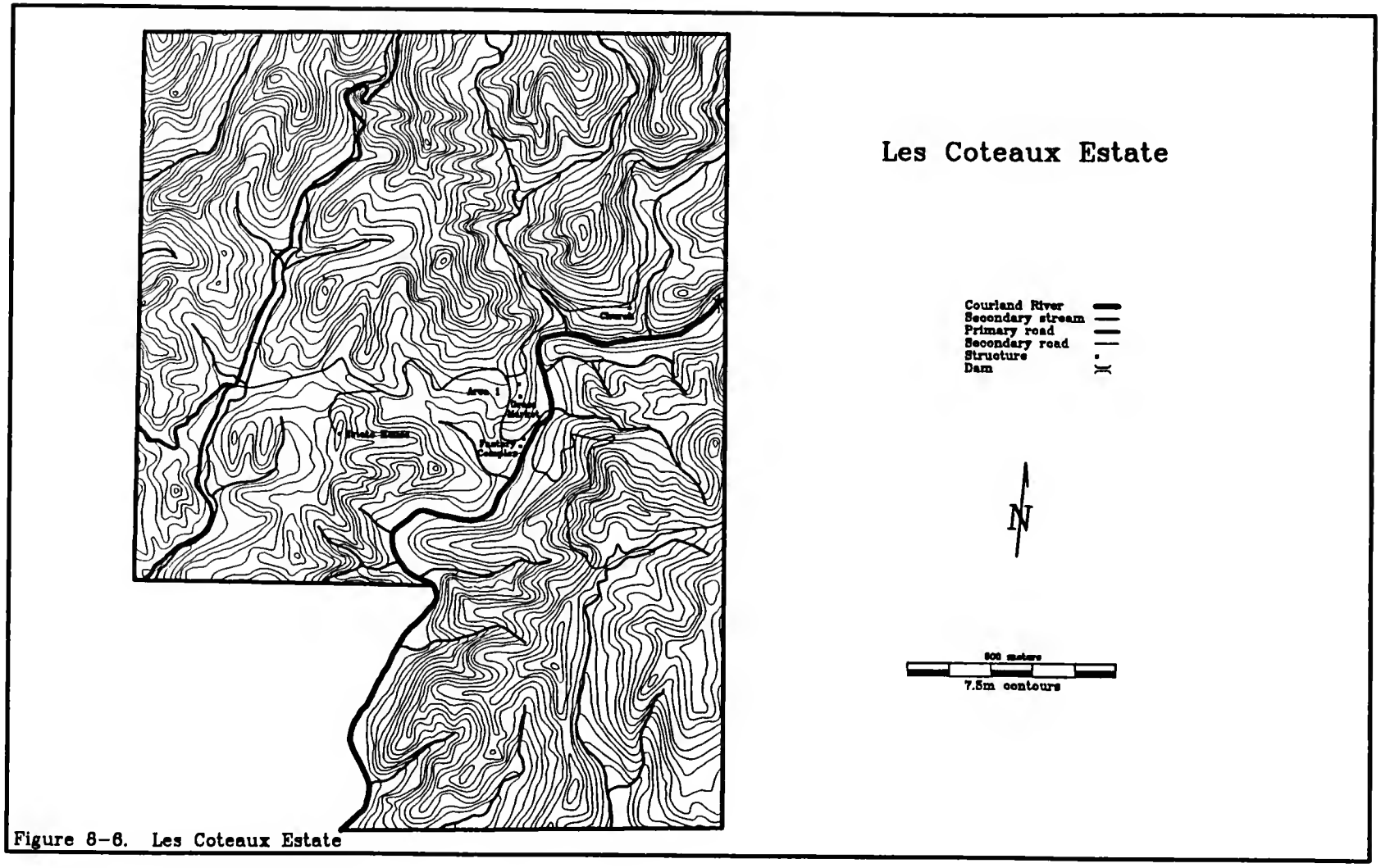


Figure 8-6. Les Coteaux Estate

bisected by the Courland River. Located roughly in the center of the parish, Les Coteaux occupies an area of high hills and precipitous slopes. The minimum elevation of the estate is 22 meters above sea level where the river exits estate property in the south, while the maximum elevation is 220 meters above sea level in the northeast corner.

Despite difficult topography, the estate is well-watered. In addition to the Courland River, it is crossed by four low-gradient perennial streams oriented roughly north-south. The suitability of the estate for planting is reflected in the fact that it was one of the last in sugar production, finally abandoned in 1943, according to a local informant, when the price that milling equipment brought when sold as scrap metal to support the United States war effort exceeded the profits from sugar production for local consumption.

The Les Coteaux crushing mill was water powered. The dam supplying the mill lies just inside the estate's eastern boundary. The dam was well engineered, and is largely intact today. A low, massively constructed feature of brick and masonry, it is 2.5 meters (8 feet) wide at the base, 13 meters (42 feet) long, and less than 1.5 meters (five feet) high. Primarily a diversion structure, three openings are apparent in the face. One accesses the canal on the north side of the river, while the others operated as outlets to prevent damage to the structure during periods of high

runoff. During drier periods of low runoff, one or both of the larger outlets could be shut by dropping iron doors into place along slots in the outlet interiors, creating a pool behind the dam that generated sufficient pressure to drive water from the dam to the factory some 700 meters downstream.

The Les Coteaux sugar factory is located adjacent to the Arnos Vale Road, on an artificially constructed terrace immediately overlooking the Courland River. Though there is room for a more traditional T-shaped, L-shaped or linear factory complex, the structures comprising the factory are not contiguous; five separate structures exist (Figure 8-7). While three are only tentatively identified, the boiling room and the distillery are readily apparent, as are the wheel pit and the mill pad.

Based on the size of the mill pad, the crushing mill was of the horizontal type. It may have been connected to an overshot or backshot water wheel. Alternatively, a breastshot wheel may have been in place. Conrad Price (personal communication) reports that, prior to its 1943 abandonment, the wheel at the Les Coteaux factory was the largest on the island (much larger, for example, than the Arnos Vale wheel, an overshot wheel which is still extant today). With this system, water was piped under the road between the canal and the factory, to emerge in the back of the wheel pit at the midpoint of the wheel. Existing

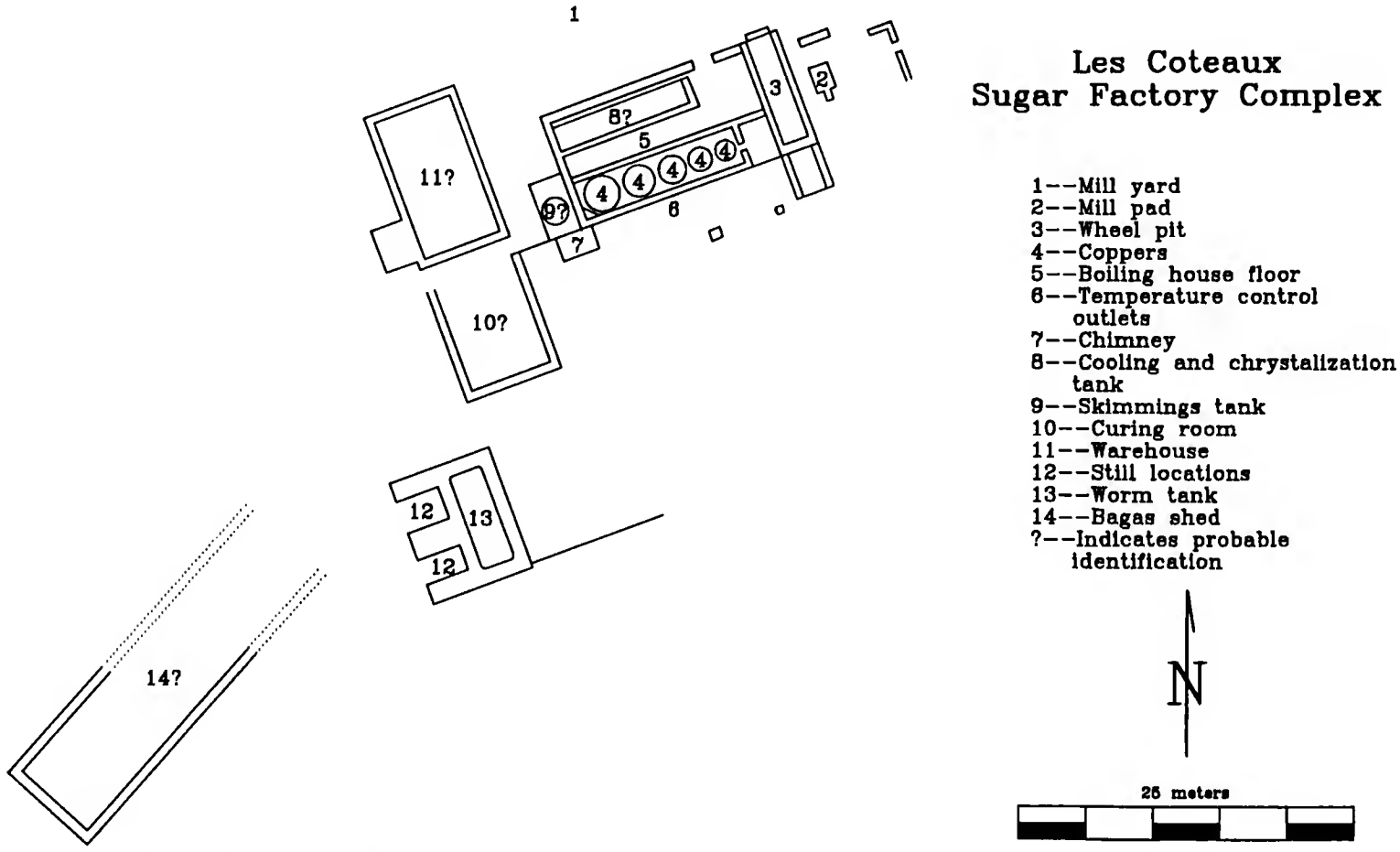


Figure 8-7. Les Coteaux Sugar Factory Complex

evidence--including the height of the canal above the factory, the length of the wheel pit, the presence of a castiron pipe running under the roadway, and a possible brick-constructed overflow tunnel and outlet adjacent to the factory--supports either interpretation.

While the walls of the boiling room are rarely preserved above a height of about 50 centimeters, enough is present to reconstruct the floor plan. Covering an area of 137 square meters (450 square feet), the boiling room is not large by Tobago standards. The layout appears very similar to that of the Providence Estate boiling room depicted by McTear (n.d.--see Figure 6-1). Although no coppers are currently at the site, their locations are identifiable by the iron bars that partially supported them within the brick framework of the jamaica train. The locations of the coppers are included in Figure 8-7.

Northeast of the boiling room are the remains of a well preserved worm tank, identifiable by its characteristically massive construction, bathtub shape and plastered interior. Three short, massive walls protrude from the east side of the worm tank, forming two alcoves that formerly housed the stills themselves. A possible wall extends from the west side of the worm tank as well, and may be the only portion of the remainder of the distillery preserved on the surface. According to local informants, the area between the worm tank and the boiling room was entirely paved with large

flagstones when the property was in production. No evidence of these flagstones was encountered, however.

The three remaining foundations have not been functionally identified with any great confidence. Just east of the boiling room are the partially preserved foundations of two smaller structures. These are tentatively identified as a curing room and a warehouse in which the finished products of the estate were stored prior to shipping. The latter structure is sited at the same elevation as the boiling room while the former is somewhat lower. East of the worm tank is a third structure. Long and narrow, it may have served as a bagas shed where the crushed cane was dried prior to being burned below the jamaica train or the stills. As these three foundations do not extend above ground level, no additional information is available.

The remains of the T-shaped Les Coteaux estate house (Figure 8-8) are located 440 meters west of the sugar factory. Situated on a high hilltop commanding a view not only of the factory site, but of the three additional structures identified on estate property as well (discussed below), the hilltop is reached by a short steep drive from the north. Prior to construction, the hilltop was truncated, and the fill was dumped behind a series of masonry retaining walls, forming a platform large enough to support the estate house. While the top of the T sat directly atop bedrock, the base extended out over a filled

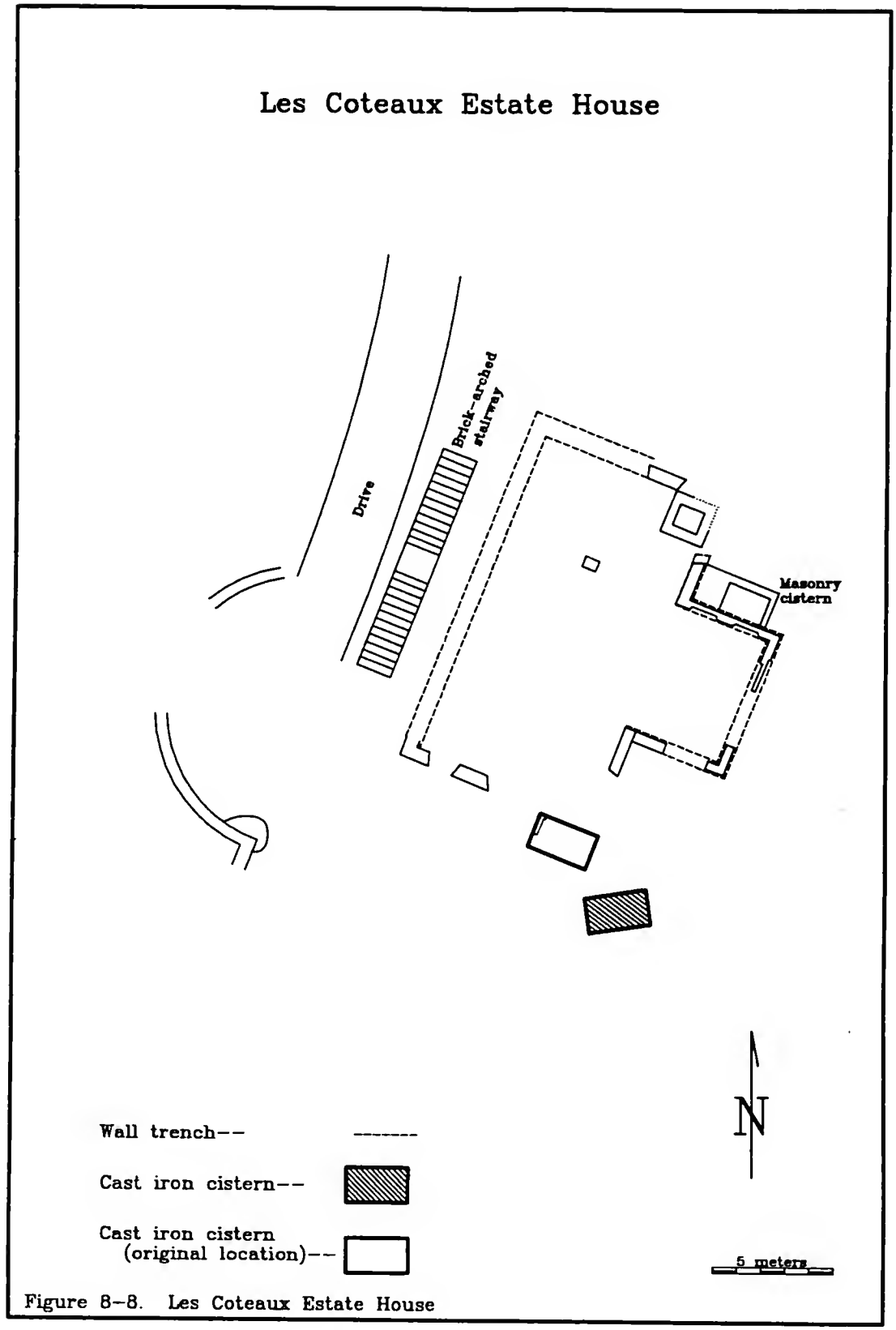


Figure 8-8. Les Coteaux Estate House

area to the east. A second area of fill behind a semi-circular retaining wall at the top of the drive provided a paved place to turn vehicles. A drain is visible at the southern end of the retaining wall defining this paved area.

The most striking feature of the estate house today, visible on the approach up the drive, is a tall, gracefully arched brick stairway. Rising to a height of nearly three meters above ground level, these stairs gave access to a 1.8 meter wide westward facing veranda that stretched across the front of the structure, providing a view of the Caribbean and the sea approaches to Plymouth. From the veranda, one could enter the elevated main floor of the house at the center of the top of the T, defined less by standing architecture than by a 75 centimeter wide channel incised into the bedrock as a footer for the front wall of the structure.

The Les Coteaux estate house was supported by a series of brick-and-stone piers, six of which are extant today. Because these were exposed to view, the brick and the stone were arranged in symmetrical decorative patterns on the interior and the exterior. Standing brick walls at the base of the T form a large window opening facing to the east. Two truncated wall fragments 15 meters south of the estate house may indicate the presence of a kitchen.

No water source is present on the hilltop. Water, transported by cart or by hand, was stored in cisterns, two

of which are present at the estate house location. One, constructed of coral blocks, is attached to the north side of the base of the T. The interior measures two meters long by 1.2 meters wide by 50 centimeters deep. A second formerly sat just south of the estate house, elevated on two brick piers, one of which is partially intact. The cistern itself is still present, having shifted a few meters downslope. Made of flat cast-iron pieces riveted together to form a topless box, it measures 2.6 meters by 1.4 meters and is approximately 75 centimeters deep. Attached to the side of the cistern is a copper plaque bearing the inscription "McOnie and Mirrless, No. 121, Glasgow, 1851."

A tomb, marked by a two meter by one meter slab of igneous stone, is located 75 meters south of the estate house on a high saddle extending south from the estate house hill. The area immediately surrounding the tomb sees significant foot traffic and is heavily eroded, partially undermining the tomb's structure. The inscription is unreadable.

Three additional structures were located on the estate. Three hundred and seventy-five meters northeast of the Les Coteaux sugar factory are 16 brick and masonry piers on a gently sloping terrace overlooking the Courland River to the south. These piers supported a wooden structure measuring slightly less than eight by 16 meters (25 by 50 feet), with the principal entryway facing to the west. The long axis of

the structure paralleled the east-west contours of the slope. In a limited surface collection of the area surrounding the structure, three identical brown salt-glazed stoneware ink bottles were recovered. Noel Hume notes that "(t)he vast majority of the ink bottles (of this type)...were made in the period 1840 to 1890, although some examples of the class were probably a little earlier" (1969:79). Given this temporal context, it is likely that this structure is the one mentioned in a document produced by the Anglican Church between 1834 and 1838. In a summary of present and future construction by the church in the wake of emancipation, under the heading "Buildings proposed to be erected" is the following item: "No. 4. Les Coteaux, Parish of St. David - school, 50 x 25 ft - master's house detached, work in progress" (quoted in Phillips n.d.:chapter 24, original reference unavailable). The school, also functioning as a chapel, was to be used for the religious and secular education of the newly freed slaves (Phillips n.d.:chapter 24). Burials associated with this structure were recently moved to the cemetery of the new Anglican Church in the village of Les Coteaux, located at the corner of Arnos Vale and Culloden Roads (Conrad Price, personal communication). No evidence of the detached master's house was encountered.

The remains of two additional structures are located on the flat of a low bluff immediately overlooking the Les

Coteaux sugar factory. In size and shape, each measures seven by 19 meters, they are similar to Structure 11 at Courland Estate, and may have served a similar purpose. The Les Coteaux structures run parallel to one another along their east-west oriented long axes, and are separated by a distance of 25 meters. The southernmost of the two, closest to the factory, was roofed with ceramic tile, significant amounts of which are still scattered about on the surface in the interior of the building.

The area occupied by these two structures is locally identified as the "grass market." This identification is borne out by the presence, in the southeast corner of the southern structure, of an iron, hand-operated machine designed to compact grasses for bundling. The bundles could then be used for thatching. A small copper plate on the side of the bundling machine reads "Ransomes Ipswich. Patent," while in another area the words "Ransomes 8 May Patent" are cast into the iron itself. Also cast into each individual part is a unique identifying label to aid in reassembly after shipping.

In an effort to learn if the grass market structures were functionally analogous to an estate village (ie. if they functioned as barracks), 36 test pits, each measuring 50 by 50 centimeters, were excavated at 25 meter intervals in the grass market area, extending into the gently rolling terrain to the west, defined as Area 1 on Figure 8-1. This

terrain is broken by several terraces large enough to support small structures, and is watered by a small, spring-fed stream to the west and south. Two bits of masonry construction are present in the southern end of Area 1. They are associated with the root mass of a fallen tree, and it is not known whether or not they are in their approximate original position. Some 200 meters to the west is the base of the steep slope upon which the estate house remains stand. Several displaced wall fragments, fallen from the estate house, are present here, and this may be the source of the masonry fragments in Area 1.

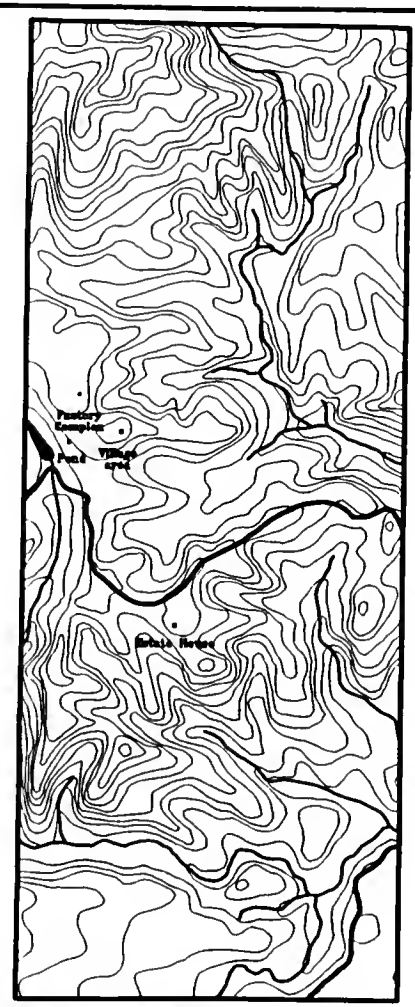
Though Area 1 is extensively eroded, a well-defined scatter of artifacts of varying, though never very heavy, density was recovered. The scatter extends northward to a broad terrace on the north side of Arnos Vale Road, east to the grass market, and south and west to the spring-fed stream. The majority of the sample is composed of domestic refuse, with European ceramics of the late eighteenth and early nineteenth century predominant. Significant amounts of undecorated coarse earthenware were also recovered, as was architectural debris in the form of square nail fragments and some brick fragments. A single impressed copper token identical to those present at the Courland village (discussed above) was recovered from a test pit on the broad terrace north of the Arnos Vale Road. These materials may indicate that Area 1 was functionally

analogous to Area 3 of Courland Estate. If so, the area of the village itself, which should contain much denser deposits of domestic refuse similar to those in Area 2 at Courland Estate, was not located. One small fragment of mortar recovered from a test pit in the flat area between the two grass market structures indicates that this area saw little use that resulted in the deposition of archaeological materials. The functional relationship of the grass market structures to the rest of Les Coteaux Estate has yet to be determined.

Orange Hill Estate

Orange Hill Estate (Figure 8-9) occupies the southernmost portion of the study area. While the northern third of the estate is characterized by steep slopes and high hilltops with a maximum elevation of over 200 meters above sea level, the central part is an upland area of gently rolling terrain. At the extreme southern edge of the estate a steeply sloping, convoluted landscape gives way to the coral lowlands at an elevation of less than 45 meters above sea level. Water on the estate is scarce. Although several streams cross the property, none carries a significant amount of water. Orange Hill Road bisects the property on an east-west axis roughly at its mid point

Orange Hill Estate is depicted, along with the neighboring Amity Hope Estate, on a nineteenth century map



Orange Hill Estate
ca. 1880
(after Anonymous n.d.; DOS 1962–1963; Young 1812a)

Secondary stream
Primary road
Structure

N

500 meters
7.5m contours

Figure 8–9. Orange Hill Estate

(Anonymous n.d.) made when both estates, worked together at the time, went into receivership under the Encumbered Estates Act. While no date is printed on the map, the estate was before the court in 1868 and 1869 (CO 441/8/8, in Phillips n.d.). Most of the structures depicted on the map are recognizable today, as is their relationship to Orange Hill Road.

The Orange Hill sugar factory complex is located on the north side of Orange Hill Road, at the western edge of the property, adjacent to a low rise. Though largely abandoned today, the area has been significantly modified over the years. The linear factory building formerly housing the boiling, curing and still room, however, is still present, and measures nine by 48 meters (30 by 157 feet). The structure was modified into a dairy barn in the mid-20th century after sugar was abandoned in the late 1930s (Leo Cooper, personal communication). The boiling room is recognizable at the northern end of the structure by the filled in damper openings in the exterior facade of the long western wall. A windmill for cane grinding is shown on the Encumbered Estates map as well. It is located 77 meters north of the factory building. The windmill tower is still extant, and was converted into an equipment storage area for the cattle operation. The base of this tower measures nine meters (30 feet) in diameter.

Several additional structures are depicted on the Encumbered Estates map (Anonymous n.d.) in the factory area. Immediately to the west of the factory building is an earthen dam across a small stream, creating a small pond. Water from the pond was pumped to the rum manufacturing area, located at the southern end of the factory building, via wind power. Although the foundation of the pump mill is not present on the surface, the Encumbered Estates map indicates that it formerly occupied a position 14 meters south of the factory building. It may have been destroyed during later modification of the site. In addition to the dam, pond and pump mill, a bagas shed and an overseer's house are identified on the map, the former roughly half way between the windmill tower and the factory in an area now obscured by a modern concrete foundation, and the latter about 40 meters east of the factory on a site currently occupied by a small, concrete block habitation. Finally, 13 "cottages" appear approximately 70 meters east of the factory complex, in a random layout. A surface examination in an occupied horse pasture on the low rise east of the factory building yielded a light scatter of early to mid-nineteenth century ceramics. These indicate a primarily post-emancipation occupation of the village area. The only architectural remains located on the rise, though not depicted on the map, are the brick and masonry base of a hexagonal windmill tower measuring eight meters (26 feet)

across. The hollow interior of the structure contains a square masonry foundation with an exterior dimension of 1.9 meters (6 feet) that functioned as a mill pad.

The located estate village could not be securely dated to the period of slavery based on surface indications, while the remains of an early windmill tower indicate that the area initially functioned as a mill yard and was not given over to habitation until relatively late in the slave period. Further investigation would have required subsurface testing and the removal of the pasture's occupants. Given the lack of alternative pastures, the likelihood that the village was occupied primarily by free laborers rather than slaves, and the presence of other, more promising village sites, no additional investigation of the Orange Hill village area was undertaken.

The Encumbered Estates map (Anonymous n.d.) also shows the estate house, and five ancillary buildings labeled "offices." The remains of these structures are located on a low hilltop 430 meters south of the factory complex, and are reached by a short drive on the south side of Orange Hill Road. While the remains of the "offices" are fragmentary, the estate house foundation is largely intact. The wooden structure it supported was destroyed by a tropical storm in 1989, although it had been previously abandoned (Leo Cooper, personal communication.). The remains indicate that at least two structures were built on the same site (Figure 8-

10). The earlier structure, constructed on brick piers, was T-shaped, with the base of the T extending to the southeast. It was reached by two sets of arched, brick stairways, one at the front of the house facing the drive and the second at the rear of the house facing a panoramic view of Scarborough to the southeast. At a later date, the interstitial spaces between many of the brick piers were filled with masonry walls. This new foundation supported a structure measuring 11 by 13 meters (37 by 41.5 feet).

Two cisterns are present at the Orange Hill estate house, both in the southern corner of the structure. One is constructed of concrete while the other is made of cast-iron and is supported on two brick piers.

No other architectural remains were encountered on Orange Hill Estate. However, a local informant indicates that a cemetery containing two markers was located at the distal end of a low ridge extending southwest from the site of the estate house (Leo Cooper, personal communication). Though Mr. Cooper showed me the site, no evidence of these burials is apparent on the surface.

Summary of Intensive Survey

Three estates have been discussed in this chapter, Courland, Les Coteaux and Orange Hill. They were operated using the two primary power sources in St. David's Parish, water and wind. In many respects, they conform well with

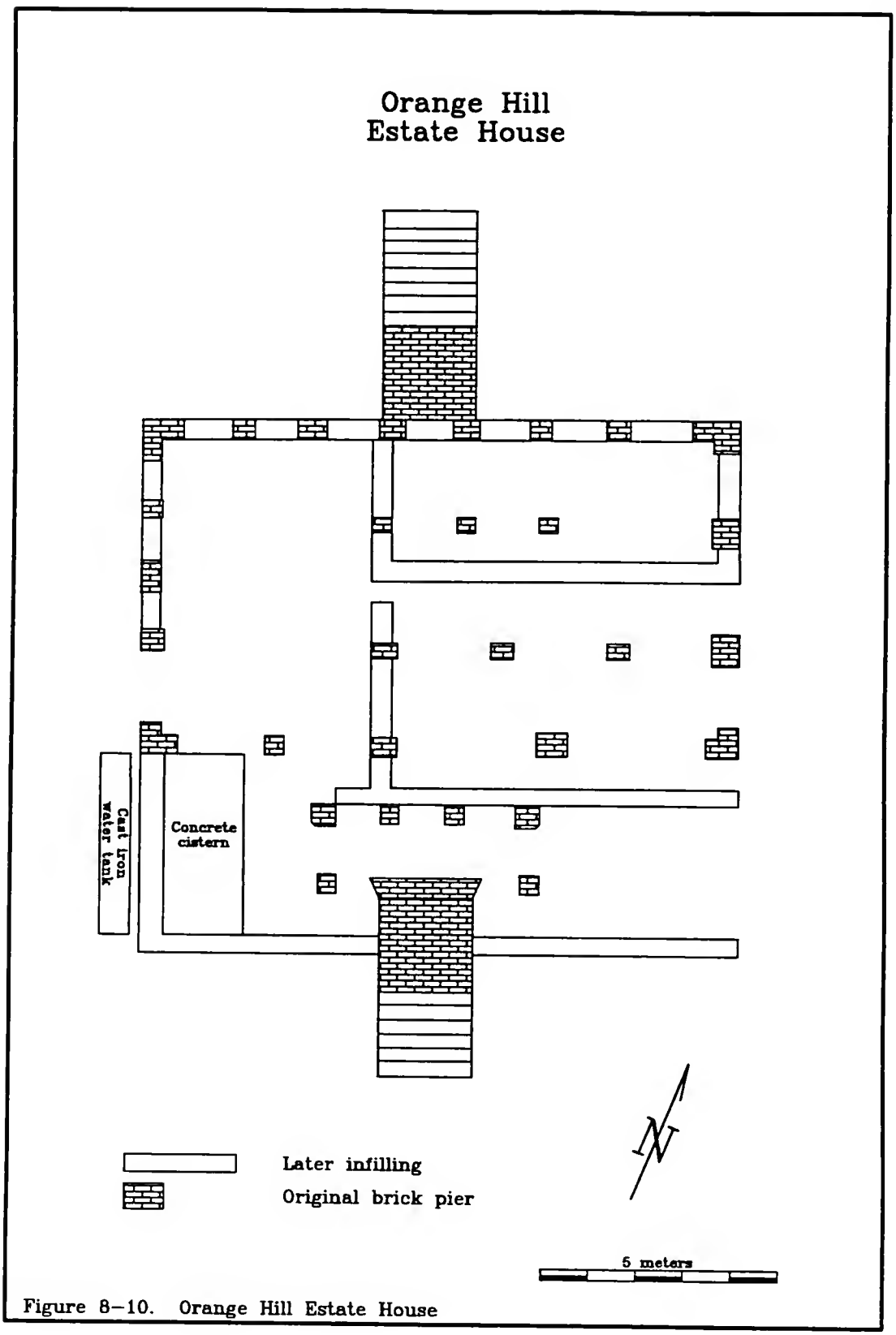


Figure 8–10. Orange Hill Estate House

the pattern laid out by Higman (1988) and generally confirmed by the regional survey results discussed in Chapter 7. In particular, Les Coteaux Estate, with its sugar factory in the Courland River valley bottom and its estate house on a high hilltop in an overwatching position matches Higman's model closely. Courland and Orange Hill, in contrast, present some aspects which are not in conformance with the model.

The most readily apparent deviation from Higman's model relates to estate house location, apparent at Orange Hill, where the estate house is sited at the same elevation or slightly lower than the sugar factory rather than on the many hills to the north of the factory which are elevated above the estate and factory. The chosen estate house location, in a position overlooking Scarborough, suggests that other factors may be in operation. Reassessing the locations of the estate houses discussed in Chapter 7 as well as those of Courland and Les Coteaux Estates, it becomes apparent that in addition to accessing prevailing winds and affording planters a view of the operation of their own estates, elevated estate house locations provided views of population centers, neighboring estate houses (which were also in elevated positions), and semaphore stations which were maintained by the military for communications between Fort King George at Scarborough, and outlying forts, batteries and garrisons scattered about the

coast. Finally, shipping in the waters around Tobago were often visible, even from estate houses located in inland areas.

The remains of two estate houses were located at Courland Estate. These appear to have been constructed and occupied at different times. One, located on a ridge to the southeast of the factory and flanked by a tomb dating to 1837, conforms well with Higman's model. As this estate house appears on the Carte Militaire, it was in place by 1784 and is likely the earlier structure. The second estate house is adjacent to the sugar factory, and thus does not conform to Higman's model.

While the location of the earlier estate house at Courland was not unusual, in the context of the regional survey the presence of several ancillary structures in the immediate surroundings was aberrant. The remains of seven of these, oriented to the same direction as the estate house, exist. While one no doubt functioned as a kitchen, removed from the estate house itself to decrease the chance of fire, the function of the other structures is unknown. Courland, and to a lesser extent Orange Hill, are the only two estates in the study area that possess such ancillary structures.

Limited testing was undertaken at the Courland estate village. In contrast to Higman's model, where villages are located so as to form a roughly equilateral triangle with

the estate house and the sugar factory, the Courland village is located adjacent to the contemporaneous estate house. In addition, the structures contained within the village were constructed on an axis that was identical to the buildings in the estate house complex. This symmetrical arrangement is unlikely to have occurred by happenstance, and may be related to the close proximity between the estate house and the village.

The deviations from Higman's model summarized here are discussed more fully in Chapter 9.

CHAPTER 9
A REGIONAL PERSPECTIVE

When planters first encountered the island of Tobago, they saw not an untamable wilderness but rich and fertile land ripe for colonization. The land was not uniform, however. Steep slopes, dense forestation, shipping access, health concerns, and water availability all tempered the perceived desirability of individual plots of land. Based on their perceptions of the positive and negative factors affecting individual plots--perceptions which were probably developed less by personal observation and more by word-of-mouth in the earliest years of settlement--Tobago planters selected and bought their chosen lots. The rapidity with which the land was sold reflects the overall attitude that sugar was a product of enormous potential value and that Tobago was well suited for the cultivation of cane. The distribution of lots sold also reflects rapidly changing ideas about where the lands most suitable for cane cultivation and sugar production were located.

Constraints to Production and Layout

The initial land sales on Tobago occurred primarily in the area immediately surrounding Barbados Bay. Selected as

the site of government by virtue of its geographic centrality (Young, in Archibald 1987:117), it was soon abandoned in favor of a more westerly location. The new site, Scarborough on Rockly Bay, was also centrally located, though with reference to population rather than geography. The shift in population towards the west occurred as planters became increasingly familiar with the island. The shift was initiated by James Simpson, chief surveyor of Tobago and the European most cognizant of the potential of individual land lots.

Simpson bought his property, lot 1 of St. David's Parish (Courland Estate), some time prior to the second land sale. Other buyers were quick to follow his lead. During the second land sale in 1766 St. David's Parish lands were the most popular. Not all parish lands were sold, however. Rather, sales were confined primarily to the southern and western portions of the parish including all or part of what would become Amity Hope, Orange Hill, Lower Quarter, Mary's Hill, Whim, Providence, Dunvegan, Les Coteaux, and Franklyn's (Nardin 1969:Plate IV). These are principally the lots closest to Barbados Bay. Incidentally, most of them also border the Courland River.

By the third round of land sales in 1767, attention shifted to St. Patrick's and St. Andrew's Parishes to the south. Courland Estate and the estates of St. Patrick's and St. Andrew's share two commonalities. Most importantly,

they have sufficient surface water to support both life and the rum-making process. Where Courland Estate abuts the Courland River and contains two perennial streams within its boundaries, St. Patrick's and St. Andrew's Parishes have many small but reliable springs. Second, both Courland Estate and St. Patrick's and St. Andrew's Parishes are relatively flat, the former as a result of Courland River deposition (Trinidad and Tobago Ministry of Agriculture and University of the West Indies 1974) and the latter as a result of emergent coralline formations (Niddrie 1961). Significantly, low relief facilitates road construction and maintenance and simplifies problems of transport of cane to the factory complex and muscovado sugar, molasses and rum to legal ports of entry that effect the more rugged portions of the island.

That ease of transport was the over-riding factor in selecting plantation lands is borne out by the tendency in subsequent land sales to first buy land with access to sheltered bays despite its distance from population centers. Indeed, ease of transport outweighed the recognized advantages of access to water power to drive crushing mills in many instances--Courland Estate and virtually all of the estates of St. Patrick's and St. Andrew's utilized windmills to power their crushing mills (Eubanks 1992). Possible explanations for this apparent inconsistency lie in the relative design complexity of the two power systems, in the

materials used in their construction, and in the maintenance required for their upkeep.

While the engineering capabilities required to construct a windmill were considerable, they pale in comparison to the skills necessary for construction of a water powered system. Windmills were fairly uniform throughout the island, though some temporal variation in their form is present. Because they rely on the breeze to drive them, the construction of windmills was more or less a boilerplate operation. While siting to access both wind and factory is a critical consideration, in the relatively flat lands where wind powered sites are predominantly located, it was a fairly simple task. In contrast, each water powered site is unique, varying in accordance with the nature of the water course it tapped, the underlying substrate and the surrounding topography. In conjunction, these factors effected dam location, canal length, overland entrance and egress, and factory siting. Where a broad stream like the Courland River required a dam principally designed for diversion, small streams required both diversion and impoundment structures, sometimes constructed as a single dam but often as separate structures. For stability, dams had to be constructed on bedrock outcrops, which constricted the watercourse valley and thus limited the land available for factory siting and constrained road construction. Finally, canals had to be long enough to access factories,

usually requiring that they cross smaller drainages, a task accomplished by the construction of small aqueducts.

In terms of materials, those used for windmill construction were more readily accessible and easier to work with given the range of skills available on Tobago. Where the structures associated with water powered systems--the dam, canal and wheel pit--required stone or brick construction and necessitated skilled masons, windmills were made primarily of wood during the first 50 years of settlement. Though later windmill towers were tall, circular structures constructed of stone and brick (Anonymous n.d.), the earliest were primarily wooden structures (CO 285/13; Young 1812a:103) atop low hexagonal stone and brick bases such as those at Adventure Old Works, Mary's Hill and Orange Hill. As late as 1808 there were 64 carpenters enlisted in the Tobago militia, as opposed to only 10 masons (CO 285/13). Wood was not only easier to work with, it was a necessary by-product of putting the land in production in Tobago's heavily forested natural environment (Niddrie 1961). This fact may be less significant, however, in that stone was a by-product of road construction, particularly in the hilly areas dominated by water powered estates where roads had to be cut into steep slopes. Bricks were imported in ship's bottoms as ballast, and were being manufactured on Tobago by the second decade of the nineteenth century (Young 1812a:103).

Both wind and water powered systems, of course, were subject to general wear and tear brought about by near continuous use during the harvest season. Repair was no doubt a nearly constant task. However, where severe damage to windmills would occur only during tropical storms and rare hurricanes, seasonal rainfall created freshets in Tobago rivers and streams, on a year-to-year basis, that would have significantly damaged water control and delivery systems with depressing frequency. Affected particularly would have been dams, canal inlets and aqueducts. In severe cases, the potential for damage to the water wheel itself was present.

The planters who initiated agricultural production on Tobago in the mid-eighteenth century faced not only environmental constraints, but constraints imposed by the government as well. Foremost among these was limited acreage. By the second decade of the nineteenth century, while not all estates contained the 500 acres or less mandated by parliament (CO 101/1:75, in Nardin 1969:296), the large majority did (Young 1812a). Tobago sugar estates, averaging slightly more than 400 acres (Young 1812a), occupied significantly less land than did sugar estates of Jamaica, where the average estate covered just over 1000 acres (Higman 1988:81). As a result, the layout of Tobago estates was in some ways compacted. For example, where Higman (1988) cites an average area of seven acres for a

sugar factory complex on Jamaica, the St. David's Parish sample was significantly smaller, on the order of one to two acres. Such is not the case, however, for the distance between the various elements of an estate. On Tobago, the average distance between the estate house and the sugar factory is 345 meters,[1] agreeing well with Higman's (1988:81) figure of 391 yards (357.5 meters) for Jamaica.[2]

A Model Estate

As discussed above, the principle factors effecting sugar factory siting were access to water for rum manufacture and ease of transport to and from the factory. Only after these requirements were met was the power source decided upon, and a factory site chosen. Given an advantageous location--a stream with sufficient flow crossing a bedrock outcrop in proximity to a relatively level area large enough to support a factory complex--water power was preferred. In the absence of such a location, windmills were constructed. In only one instance, at Golden

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[1] This figure is based on the 14 instances in St. David's Parish in which both the estate house and the sugar factory were securely identified. It includes the distance between the Adventure estate house and both the old and new works.

[2] Higman (1988:81) also cites distances of 384 yards (351 meters) between estate village and sugar works, and 418 yards (382 meters) between village and estate house. Insufficient data exists on Tobago (only three estate villages were securely located) to make a meaningful comparison with this data.

Lane Estate, was a cattle mill used in St. David's Parish. Significantly, it is sited with access to a small stream providing water for rum manufacture, and to a road sloping generally downward to the shipping point at Arnos Vale Bay.

Upon selection of a factory site, the layout of the complex itself was determined. A preference for any one particular form over others is not present. Of the 22 sugar factories encountered in St. David's Parish, five are L-shaped, three are T-shaped, two are linear, four are discontiguous, and one is laid out as a rough square. In seven instances, the form of the factory was not determined. This was an odd finding, given that a T-shaped factory is probably the most efficient from a production standpoint (Beckford 1790:28). This form is more compact on the landscape and requires less travel time between various areas, reducing transport effort and enhancing supervision. In an industry stressing production with forced labor, these should be important concerns (Wray 1848:285). Rather than worry about form, however, the engineers who designed these factories and the planters who directed their efforts worked within the limitations imposed by local topography, ensuring that the floor of the boiling room was significantly higher than that of either the curing room or the distillery.

The Estate House

The preferred location for an estate house was a hilltop. Such a location gave access to cooling breezes that kept the insect population down and also provided the planter with a commanding view of the sugar factory and the estate village. These concerns were made explicit in several contemporary documents (e.g., Young 1812a:166), and are generally accepted by modern researchers (e.g., Armstrong 1990; Handler and Lange 1978; Higman 1988). Construction techniques were adapted to these goals. By building an estate house on elevated piers, both the view and the breeze were enhanced. Other concerns may have been equally important, however, in both the siting and construction of estate houses.

Orser distinguishes between the "internal and external functions" of slaves (1988:740). Internally, slaves provided labor while externally they demonstrated the purchasing power of the owner. In more general terms, internal functions enhance estate operation while external functions enhance the status of the planter in the eyes of his peers. An internal/external distinction is useful when discussing estate house location. From an internal perspective, one result of hilltop locations was enhanced communication, valuable both for security, in the event of invasion or revolt, and for economic reasons. In nearly all cases, the estate houses of St. David's Parish were visible

from the established towns of Plymouth and Scarborough, or from other estate houses. Such siting allowed communication between locations that were distant from one another by road. Signal stations, set up by the military on high hilltops in the interior of the island (Anonymous 1784), were used to communicate between towns and between the two forts and 15 batteries guarding the coast (Young 1809:155). Since the Tobago militia, drawn from townsmen and the estates (CO 285/13), served many of the batteries, it was advantageous that the signal stations were also visible from many of the estate houses. In an extreme case, the station on top of the 244 meter high French Fort hill was visible from the probable location of Runnemede estate house, some eight kilometers to the north. In the event of an emergency such as a foreign invasion or a slave revolt the European population of Tobago, though scattered about the island on isolated estates, could have been informed almost as soon as the event occurred. As nearly all able bodied European men served in the local militia, such a system would have been mandatory for any rapid armed response beyond that of the regular army garrison. The arrival of friendly ships could have been communicated in the same manner, enhancing Tobago's economic ties with Great Britain.

From the perspective of external function, not only were estate houses visible to one another and to population centers, they also tended to be oriented in those

directions, sometimes at the expense of the planter's view of the estate. A case in point is Les Coteaux estate house. While the front of the structure faces west towards the town of Plymouth, the factory complex is almost due east. Thus, while physical and economic security was allowed by hilltop locations, the orientation of estate houses may have fostered a sense of community between Europeans. In the isolated environment of a Tobago estate, the sight of a friendly face was replaced with the view of a neighboring house. If, in the view of slaves, estate houses garnered an aura of power as the center of estate authority (Armstrong 1990), their siting also engendered a feeling of solidarity on the part of planters (Pulsipher 1992).

Because they were exposed to view, great pains were taken in the design of estate houses. In contrast to the factories, the preferred estate house design may have been T-shaped, at least during the period of slavery. Whatever their form, however, estate houses were symmetrical, while decorative elements such as arched stairways and designs in supporting piers were always present. Because they were less bound than factory buildings by functional considerations and topographic variation, symmetry and regularity were considered to be desirable aesthetic attributes.[3] The builder of the old estate house at

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[3] In this regard, it is interesting than none of the discontiguous sugar factories identified in St. David's Parish are visible from the main roads.

Courland went so far as to offset the main steps of the house to one side, thus presenting the appearance of symmetry as the house was approached. Again using the internal function/external function dichotomy, symmetry operated on an external level by reflecting the Georgian world view of the planters, who thereby reified their ties with British subjects who did not emigrate to the New World. The grandeur of the estates houses, expressed in their elevated design, gracefully arched main stairways and decorative brickwork on exposed supporting piers, on the other hand, indicates that estate houses may have been status symbols, signalling the worth of the owner and his or her association with the aristocracy. That these signals were most apparent from the main drive approaching the houses indicates that they were directed towards other Europeans rather than towards the slave population, who could be expected to approach the houses, on those rare occasions when they did, by a more direct route.

Otto (1984:127) defines a "showplace plantation" as an estate "where elite travelers could be assured of a hospitable welcome." Courland fits this description. Its proximity to Plymouth made it accessible while the position and political clout of its original owner, James Simpson, made him a well known figure both on and off the island. At selected estates, the external "showplace" function may have been complimented by an internal function as a "premier"

estate, manufacturing a variety of supplemental products used in sugar production but not readily available otherwise.

The tradesmen--wheelwrights, carpenters, blacksmiths, barrel-makers, etc.--responsible for manufacturing these supplemental products were slaves. These slaves were highly skilled, and they would have been expensive to buy or train. Not all estates could afford such an investment, however. Thus only a few estates on the island performed such supplemental manufacture, making their products available to other estates for a fee. Courland old estate house is the only estate house in St. David's Parish that contained a broad variety of ancillary structures in association. That supplemental manufacture was engaged in at Courland is a likely explanation for the presence of these structures.

No documentary records exist on Tobago to confirm this hypothesis, though support is provided by the fact that only one estate produced more sugar and rum in 1811 than Courland. That exception is Betsey's Hope Estate (often referred to, as it is today, as Louis d'Or Estate) in St. Paul's Parish which was owned by Sir William Young, then governor of Tobago and member of a very prominent Caribbean family owning several additional estates on other islands (Young 1812a). Prominent individuals are here considered more likely to own or build "premier estates." The "offices" at the Orange Hill estate house may also have been

the sites of supplemental manufacture rather than offices in the modern sense, though this could not be confirmed in the field. The owner of Orange Hill Estate in the late eighteenth century was William Lindsay, who was appointed Governor of Tobago in 1794. Thus, he conforms to the expected station of a premier estate owner.

What are here defined as premier estates also existed on Antigua. Betty's Hope was established in ca. 1655 and by 1668 had come into the hands of the Codrington family, eventually becoming their "flagship estate" (Goodwin 1994:100; Pulsipher and Goodwin 1988:1). The Codrington's were on a social par with Sir William Young of Tobago--where Young served as the Governor of Tobago, the Codrington family of Betty's Hope supplied two Governor-Generals of the British Leeward Islands in the late seventeenth and early eighteenth centuries. The prestige attached to Betty's Hope Estate lasted throughout the eighteenth century. It's ca. 1897 preeminent position and the function of a premier estate were described by an Antiguan laborer many years after the fact:

> Betty was the largest estate on the island and it would have a good amount of work while the others would have very little--particularly in the dull season--for Betty was responsible to carry out the repairs on the mills and other equipment for some of the other estates.... The workshop at Betty was second to none on the island and the best tradesmen of all kinds was there. Blacksmith service was one of the most important things back then and no place could touch Betty's Hope. Coopering and tanning was also important back then

> and old Betty was very capable in them things too (Smith and Smith 1986:87-88).

The Estate Village

The generally accepted location of the estate village was "in a peripheral but proxemic position to the main complex" (Lange and Handler 1985:18). At Courland, however, the village is adjacent to the estate house, indicating that other factors were in operation.[4] These factors relate to Courland's status as both a showplace and a premier estate. In this view, it is significant that both the Structure B and Structure D foundations at Courland estate village were aligned on nearly the same axis as the majority of the structures in the estate house complex, reinforcing the overall symmetry of the whole.

Orderliness, serving both an internal and an external function, was also an apparent goal of Tobago planters in the construction of estate villages. Confirming the description of slave housing provided in Chapter 8, a description which was borne out by archaeological testing, is the following: "The negroes inhabit three streets, near

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[4] The village associated with Orange Hill Estate cannot be firmly dated to the period of slavery or the founding of the estate. Although it is depicted adjacent to the factory on the Encumbered Estates map (Anonymous n.d.), it may have been moved following the changes in estate layout that accompanied emancipation. As this discussion is primarily concerned with village location during the period of slavery, the Orange Hill village is not included in this analysis.

the plantation to which they are attached: their huts are built of stone, and covered with slates" (Lavaysse 1820:350). The accuracy of this description is borne out by limited surface survey of Golden Grove Estate in St. Patrick's Parish, one of estates referred to in the above quote. These data indicate that at least some planters considered orderliness within the estate village to be important. Internally, orderliness reinforced the regimented sugar production system and the power of the planter (Goodwin 1987; Higman 1988; McKee 1992). Externally, it enhanced the overall pattern of estate regularity (Pulsipher 1992).

A Dynamic Perspective

The model presented above is static. In reality, however, sugar estates throughout the Caribbean were modified on a frequent and regular basis, with modifications ranging from equipment upgrades (Eubanks 1992) to the moving of entire estate complexes (Pulsipher and Goodwin 1982). The estates of St. David's Parish provide several examples of such modifications.

The earliest archaeologically recognizable modification occurred at Adventure Estate when a new sugar factory was built between 1784 and 1807. The old factory is located on a hilltop in the western portion of the estate (Anonymous 1784) where cane was processed with a wind powered crushing

mill. By 1807, however, Young (1809) notes that the mill was water powered. The water wheel he refers to was probably located at the site of the new sugar factory adjacent to the Courland River. The late eighteenth century was a boom time on Tobago. As sugar profits steadily rose, more capital became available to Tobago planters. The owner of Adventure responded to increased capital availability and the prospect of greater profits by building a new, more efficient water-powered mill. This necessitated the relocation of the entire factory complex to its new location on the Courland River.

A similar economic argument can be used to explain the presence of steam engines at Franklyn's and King Peter's Estates by 1807 (Young 1809), as well as the fact that 13 estates were put into sugar production after 1786 (Young 1812c). Planters with insufficient capital to immediately initiate sugar production, or located on land that was in some way marginal for sugar production, could fall back on a variety of crops. Land use figures for Tobago indicate that during the period of initial settlement by the British, planters often relied on cash crops other than sugar (Young 1812c:92). Foremost among these was cotton. One of the major advantages of cotton is that it does not require extensive capital outlay for processing facilities. Rather, though it is labor intensive, once labor is available cotton is inexpensive to produce. Capital from cotton production

(or indigo, coffee or cocoa) was then reinvested in sugar processing equipment. Franklyn's and King Peter's Estates are poorly suited for wind or water powered mills. Steam, though experimental at the time, was seen as a viable means of sugar production in the absence of alternative power sources. The steam engines that were formerly present at Franklyn's and King Peter's Estates may have been bought by the owners as funds became available through the production of other crops.

From 1807 onwards, the anti-slavery lobby made sugar production ever more difficult. Despite growing economic and political pressure on the planters, at least some continued to reinvest what capital was available to them in sugar production equipment. Eubanks (1992:199-200) argues that reinvestment was a response to declining labor in the period following emancipation. Briefly, machinery upgrades were primarily directed towards increasing juice-yield per cane. Production levels were thus maintained despite the decreasing availability of labor to work the cane fields. At Arnos Vale, a steam engine was installed adjacent to the crushing mill to supplement the power derived from the water wheel, increasing juice-yield per cane from an estimated 61 percent when crushed with a water powered mill to as much as 81 percent when crushed with a steam powered mill (Benjamin 1880:839).

At Courland Estate, the estate owner may have gone beyond upgrading equipment. The Courland old estate house was occupied at least as late as 1837, when Eliza MacDougal was laid to rest in the adjacent tomb. Sometime during the remainder of the nineteenth century, however, a new estate house was built adjacent to the sugar factory. By placing himself in such close proximity to the manufacturing process, the planter would have been able to oversee production more closely, eliminating the inefficiency that would have resulted from a poorly supervised work force. Although the date of this move is not known, it most likely followed the hurricane of 1847. The Courland old estate house may have been among the 30 estate houses destroyed by the hurricane (Woodcock 1866:107), to be subsequently replaced by a new structure at the new location.

A factor that Eubanks does not discuss, but which may have contributed to the tendency to reinvest, was an influx of new immigrants, and presumably new capital, in the period following the establishment of encumbered estate courts on Tobago in 1858. Between 1832 and 1867, every estate in St. David's Parish changed hands (Table 7-2). Based on the surnames of the owners, this represents not a passing on of property at the time of death, but the abandonment of sugar production by the old, established families of Tobago. The enthusiasm of the newcomers is reflected in the remains of sugar estates. Of the dated milling equipment encountered

during the survey and by Eubanks in 1989, all date to the mid-nineteenth century. In addition, six of the 10 identified windmills in St David's Parish were probably constructed during this period as well. Colonial records written in 1808 (CO 285/13) indicate that only sugar factories were built entirely of stone or brick, while windmills were primarily wooden structures on a low stone foundation. By the late 1860s, however, the standing windmill tower at Orange Hill Estate had been built (Anonymous n.d.). About 15 meters tall, it is constructed entirely of stone and brick, as were most of the other extant windmill towers in the parish. While the shift to stone construction may reflect the deforestation of the island, it certainly dates to the period between 1808 and the mid-nineteenth century and is indicative of continual reinvestment during that period.

Slave Life

Archaeological data relating to the life of the Afro-Tobagonian majority is present in the remains of the estate villages. Though the research design adopted for this project was geared more towards recovering spatial data, in conjunction with ethnohistorical research, several observations about the lives of slaves and free laborers can be made.

The initial years of settlement were probably the most difficult time for slaves. In its pristine state, Tobago was covered in dense forest of predominantly tropical hardwoods (Niddrie 1961). Before crops could be planted, the land had to be cleared. This arduous task fell to the slaves brought to the island during the initial period of British settlement. The difficulty of clearing was recognized by the Tobago planters, and they selected their slaves accordingly. Although the sex ratio among slaves would decrease rapidly in the following years, in 1771 there were only 1447 female slaves on the island, as opposed to 3064 males (Young 1812c:83), reflecting the perception on the part of the planters that males were better suited to the harsh physical demands of clearing operations.[5] Young goes so far as to attribute "repeated insurrections by the African slaves" during the early years of settlement, in part, to the heavy labor of clearing (Young 1812c:84-87).[6] He adds the African origins of the vast majority of slaves and the inexperience of the Europeans in supervising labor as additional contributing factors.

The debilitating effects of heavy labor on the slave population were undoubtedly exacerbated by poor living

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[5] In contrast the working slave population on Tobago in 1811 (defined as slaves over nine years of age) consisted of 5891 males and 5731 females (Young 1812a:99).

[6] Eubanks (1992:74) notes that two insurrections occurred in 1770 followed by another in 1771.

conditions. It is unlikely that the well constructed slave houses characteristic of later years were built at such an early date. Given three documented slave insurrections in 1770 and 1771, English merchants were unwilling to recognize Tobago securities and allow advances against them. Accordingly, with the permission of parliament, planters mortgaged portions of their property to the Dutch (Young 1812c). The sooner to pay off their debts, Tobago planters would have directed their energies in these early years towards preparing the estates for production rather than towards the construction of durable slave quarters. Confirmation of this inference through examination of the archaeological record is unlikely because early slave houses would have been constructed of materials with poor preservational characteristics that would be destroyed by later activities on the estates.

By 1775 17,514 acres were cleared (Young 1812c:89). Though clearing undoubtedly continued in the following years, the pace was slower as more and more slaves were put to the production of staple crops. Despite economic hardships for the planters enough money was apparently available by 1792 to invest in improved housing for at least part of their labor force (Young, in Woodcock 1866:65). Structure B at Courland estate village contained two rooms, each measuring 15 by 13 feet (195 square feet). Resting on a dry-laid stone foundation, the structure had glazed

windows and a ceramic tile roof. The presence of window glass and redware tiling throughout the site indicates that other, similar structures were present, though none were identified during the survey. "Duplex" structures at Cannon's Point Plantation (Georgia) are thought to have housed two families apiece, or perhaps two generations of the same family (MacFarlane 1975; Otto 1984:37), and the same may be true of the Tobago structure.

The construction and size of Structure B conform well with descriptions of slave housing in the historic record for Tobago (Edwards 1819 vol. 3:277-278). The presence of a continuous stone foundation utilizing larger stones on the downslope side closely matches Armstrong's description of excavated slave, apprentice and free-laborer housing on Jamaica, though the dimensions of individual rooms are slightly larger at Structure B when compared to Jamaican slave and free-laborer housing, and slightly smaller than apprentice housing (1990:101-124). Jamaican structures had shuttered, rather than glazed windows, however, and Armstrong makes no reference to tiled roofs, although slate may have been used to roof cooking areas (Armstrong 1990:174)

For subsistence, Tobago's slaves relied on locally produced staples, supplemented by imported foodstuffs from North America. During initial settlement, a period when the slaves were unfamiliar with their new environment, local

production was accomplished by supervised gang labor (Marshall 1991).[7] As slave familiarity with the Tobago environment increased through time, however, gang production was replaced by individual and family production in provision grounds, land allotted by the planter that was generally poorly suited for sugar production and marginal to the estate. Provision grounds were supplemented by house gardens, smaller in size and generally closer to home than grounds.

Marshall notes that, in general, gardens were created from the land surrounding the slave houses, but that on Grenada, lands "contiguous to the Negroe Houses for the purpose of cultivating gardens" was provided to slaves by law (in Marshall 1991:51). On Tobago, where care was apparently taken by planters to construct estate villages that were pleasing to the european eye, gardens that were attached to, but not part of, estate villages may have been preferred. Archaeologically, such areas would be differentiated from the village itself by a markedly decreased artifact density. Area 3 at Courland Estate

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[7] Gang labor was performed by groups of slaves undertaking like, repetitive tasks throughout the day. It is contrasted with the "task system" in which individual slaves were required to perform a set task after which work was done for the day (Gray 1958). The task system is generally associated with cotton and rice production in the Southern United States while gang labor is associated with sugar production. (See Morgan [1982 and 1983] for an extended discussion of origins of the task system and the ramifications of such a form of labor organization.)

conforms to this hypothesis, producing just under five artifacts per shovel test (at a 50 meter interval). In contrast, Area 2, identified as the village by both the Carte Militaire and the presence of architectural remains, produced a much higher artifact density.

In 1808, triple the acreage on estates was given over to provisioning in response to an embargo on export to the Caribbean by the United States (Young 1812a:263). Thus, changing political relationships between outside powers probably interrupted the supply of imports on a fairly regular basis, causing hardship among the slaves. During these periods, Tobago's bounteous natural environment would have been a source of alternative foodstuffs. Slaves had no such independent recourse following natural disasters, however.

By 1811, each slave was allowed "as much fresh and fertile land for Garden as he can cultivate" (Young 1812a:117).[8] According to Young, the land was given in fact, if not by law, to the slave who worked it. Common law did not allow provision grounds to be taken back by the planter without an appraisement by the principal slaves on the estate indicating what was planted and what was growing. These had to be paid for by the planter prior to his repossession (Young 1812a). If Young's assertion was indeed

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[8] Contemporary documents often use the terms "garden" and "provision grounds" interchangeably. In this quote, Young is referring to provision grounds.

the case, it reflects a growing slave power-base on the island. This power-base was derived from the slaves position as laborers on the estate. While they could not easily withhold their services without facing reprisals, they could work at a reduced pace, slowing production and otherwise disrupting the workings of the estate. An alternative method of empowerment was practiced by the slaves who worked at the estate houses in direct contact with the planter and his family. These slaves-- seamstresses, cooks, washers, etc.-- refused to work at any task but the one they were specifically responsible for. Thus, a cook would not sew, a seamstress would not wash, and a washer would not cook (CO 265/16).

Sundays and Thursdays were reserved for working provision grounds and for marketing. At the market, slaves sold "pigs, poultry, vegetables and fruits," while they bought "cottons, trinkets, crockery, soap, and tobacco" (Young 1812a:104). Indeed, Young contends that the retail dealers and shops in Scarborough got most of their business from slaves, while

> ...a full third of the retail trade in Tobago is carried on by Mulatto Hucksters, the housekeepers of Gentlemen, who as <u>sleeping partners</u> in the business order out their assortment of goods which are afterwards exhibited for disposal under the most seductive display and circumstances to invite and fascinate purchasers (Young 1812a:104-- emphasis in the original).

Marketing was not confined wholly to Scarborough, however:

> And Miss Kitty, Miss Anna, and Miss Rita, handsomest of blackgirls, are to be seen `in tour' on every plantation sitting under a tree near the mansion house with a Charaib basket before them containing an assortment for Massa or for Negroe (Young 1812a:104).

The presence in the Courland estate village of tokens and a quarter of a two real coin, as well as Young's wording in the above quotes, hints that Tobago's internal economy was based at least in part on monetary exchange rather than wholly on barter. Many planters from throughout the Caribbean, speaking before parliamentary committees charged with evaluating the system of slavery in the period 1789 to 1791, testified that slaves were able to accumulate significant amounts of capital by participating in the internal marketing system. Young (who was one of those called to testify before the aforementioned parliamentary committees), later noted that

> it is a fact known from daily experience and dealing by every resident in Tobago, that a currency of precious metals as money, whether joes or dollars or copper pieces called Hampees, is little, and almost at a stop but when it flows in with the slaves coming to market from their weekly sales (Young 1812a:104).

If, as the above quote suggests, slaves were the principal participants in the Tobago internal economy, they may have controlled much, if not most, of the cash on the island. Excavations within the Courland estate village reveal a diverse slave material culture, but do not conclusively indicate the origins of these materials. The preponderance of plain creamware rather than more expensive

decorated ceramic types (Miller 1980) indicates that the ceramics were bought on a budget. While this argues against the possibility that they are hand-me downs given to slaves after use by the planter and his family in the estate house, the presence of more expensive decorated wares may be explained by such actions. The frequency of plain creamware may reflect that other ceramics were acquired by planters for the use of their slaves. The relative absence of locally made ceramics supports this contention as, being both cheap and well suited to presumed slave foodways (e.g., Ferguson 1992), their frequency would have increased had slaves acquired their own ceramics.

The character of the deposit within Structure A at the Courland estate village is anomalous. As discussed in Chapter 8, fully a third of the materials recovered from this provenience are European ceramics, as compared to only slightly more than 22% for the site as a whole. This is particularly striking in that Structure A is just that, a structure. Logic would indicate that architectural remains should increase in such a context. While it could be argued that much of the Structure A deposit is backdirt derived from earlier deposits associated with Structures B and C, such an argument still cannot account for the apparent under-representation of architectural materials.

Although the function of Structure A was not determined, its stratigraphic intrusion on Structures B and

C argues for a later date. The variety of the material recovered, including a finely decorated bead, part of a goblet, two of the three buttons from the site, and a furniture tack may indicate that the economic status of Tobago's slaves rose through time. More likely, however, these materials represent the retention of valued objects. The mean ceramic date of 1799 (versus 1811 for the site as a whole) supports this conclusion, as does the increased presence of transfer printed wares. Twenty-three percent of the tin enameled ceramics from Structure A are transfer printed as compared to only 12% from the village site as a whole.

Construction of Structure A destroyed any firm evidence of earlier features excavated into the floor of Structure B or C. Such cache pits were a frequent occurrence at North American slave sites (e.g., Kelso 1984). That the deposit associated with the Structure A foundation represents a later intrusion on one of these pits could also account for the recovered artifacts. These questions cannot be resolved without the excavation of a variety of well dated, undisturbed features from within the village. Such excavations were not a goal of this research.

Under slavery, Afro-tobagonians labored for the benefit of the planter. Forcibly taken from their African homelands and shipped to the new world under inhuman conditions, slaves arrived in Tobago with few or no material

possessions. On arrival, they were sold as chattel and worked to the limits of their endurance. Despite these horrendous conditions, they maintained cultural traits that were distinctly African.[9] Modern Tobagonians are immensely proud of their African heritage, and they often stress it at the expense of their more recent ancestors, slaves. This attitude is unfortunate, for it was slaves who kept the African heritage alive despite their situation. Europeans were aware of the "African-ness" of their slaves:

> Corals and golden ornaments are the mark of the African, and it yet continues with their Creole descendants in Tobago. Not a common field Negress is without her Earrings, and the gold must be pure (Young 1812a:104).

The beads found in the Courland estate village may be a most direct reflection of the slaves' African heritage. Archaeologists have interpreted beads in African-American sites in a variety of ways. Following South's (1977) artifact pattern analysis beads have often been classified as clothing or personal artifacts (e.g., Armstrong 1983; Otto 1984). Because they have been found at nearly all excavated slave dwellings beads have been proposed as ethnic

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[9] While no data are available to support such a contention, it is likely that the cultural identity of the slaves was reinforced by their living arrangements. Despite the fact that some Tobago estate villages appear to conform to rigidly aligned European-derived patterns, this does not preclude an internal village organization along more traditional African lines. As suggested in Chapter 6, these may have reflected kinship, tribal or linguistic affiliations. Such a hypothesis would be difficult to test archaeologically, but discernable remnants of such a pattern may be present among the modern population of Tobago.

markers (Otto 1984). Finally, blue beads in particular have been viewed as having had symbolic importance for many African groups, a symbolism that was transferred to the New World (Stine and Cabak 1994; Cabak and Groover 1994). While all these interpretations may possess some degree of validity (Brown and Cooper 1990), the hypothesis that symbolic value was attached to blue beads, or to beads of any color, is likely to yield the most important revelations about African culture in the New World.

Cabak, Stine and Groover (Stine and Cabak 1994; Cabak and Groover 1994) point out that descriptions of African bead-use in a symbolic context are widespread in the ethnographic literature, that blue is the most commonly occurring bead color on antebellum southern United States slave sites, and that charms of varying color and made from a variety of objects including beads were used in the south to ward off evil spirits. Although Cabak, Stine and Groover make their argument for the symbolic value of beads generally and blue beads in particular convincingly, no archaeological data empirically supports them directly. Alternative arguments include a color preference based on other cultural factors and relative availability of color choices. Availability may be determined by the manufacturer or by any number of distributors as the bead makes its way from the source to the ultimate possessor.

Perhaps because most bead finds on African American sites are subjected to pattern analysis despite ethnographic data and archaeological interpretations that indicate they may have functioned as more than just clothing or personal adornment, the archaeological context of beads has not been critically examined. Brown and Cooper (1990) have demonstrated that a more enlightened reading of the associations present in the archaeological record can lead to more culturally relevant interpretations of African American sites. Bead contexts must be approached with the same critical eye before their symbolic attributes can be successfully argued from an empirical platform.

Free Blacks and Indigenous Inhabitants

The free black population of Tobago, like that of other British Caribbean islands, was never very large, numbering only 388 in 1812 (Young 1812a:102). Nearly half lived in Scarborough and Plymouth, where they performed menial tasks that were felt to be beneath Europeans, or worked as itinerant traders on a small scale. The remainder were scattered throughout the island, but particularly in the four western parishes of St. George's, St. Andrew's, St. David's and St. Patrick's, where they had recourse to the towns. Some women owned small plots containing "villas, stock, yards, gardens and provision grounds, given to them, or from time to time bequeathed to these their good and kind

housekeepers, by opulent planters deceased" (Young 1812a:96), which they worked with their mates or families. Other freed slaves operated the fleet of droghers, fishing or transporting sugar, rum and molasses from shipping points to the main ports in Scarborough and Plymouth (Young 1812a:104).

During the early years of settlement, when the island was still largely undeveloped, runaways were a constant problem for planters. Though unfamiliar with Tobago's natural environment, these early runaways had recourse to at least six small villages occupied by Amerindians (Bowen 1779; Jefferys 1794). While the fate of these villages is unknown, it is likely that they endured as relatively autonomous entities for quite some time, though the cultural and ethnic make-up of the groups may have shifted more towards an African pattern. Young (1812a:104, quoted above) is quite specific when he refers to the "Charaib baskets" used by slaves and itinerant traders during the early nineteenth century to display their wares, while Niddrie (personal communication) believes that some land lots were set aside for the use of the native population of Tobago. He may be correct, as land lot 31 in St. David's Parish was unclaimed in 1811 (Young 1812a). Jefferys (1765, 1794) indicates that this was the area occupied by "King Peter's People" at the time of British settlement.

If the Amerindian villages did endure, it is likely that they supplied a variety of utilitarian implements to the slave population. The coarse earthenware ceramics recovered from the Courland estate village may be the archaeological manifestation of this trade. No evidence of pottery production by slaves is available on Tobago. Thus, while the manufacture of coarse earthenwares from Tobago cannot be firmly linked to slaves and therefore cannot be properly termed Afro-caribbean wares (Armstrong 1990; Gartley 1979; Nicholson 1983, 1984, 1985; Petersen and Watters 1988), their very presence in the Courland estate village in the absence of evidence that the site was previously occupied by Amerindian groups dictates that they be minimally defined as Colono wares (Deagan 1987; Ferguson 1980, 1992).

Free Laborers

Emancipation on Tobago occurred in 1838, following a period of apprenticeship during which slaves were to be accustomed to their new responsibilities as free laborers. That the apprentices were not always willing participants in this process is indicated by the occurrence of at least two strikes in 1835.

Emancipation brought great change to Tobago, change that effected not only the former slaves, but the Europeans who relied upon them for labor. Mintz (1979) has argued

that, following emancipation on islands that had available land, freed slaves rapidly quit the estates to pursue a peasant livelihood. On Tobago, this translated into an early tendency for workers to quit the estates in favor of small villages, many of which sprang up in the vicinity of the several churches and chapels built in the years immediately preceding and following emancipation (Dowland 1843-1848), such as the Anglican chapel at Les Coteaux.

The "flight from the estates" in the months immediately following emancipation was less of an issue on Tobago than it may have been on other islands (Niddrie 1961:43). In part, this is attributed to a clause in the Tobago Abolition Act requiring planters to provide provision grounds within three miles of the estate. Those laborers who remained on the estates and continued to provide their services were allowed to continue, for a fee, their residence in estate housing and their use of provision grounds provided by the estate. They were also provided a wage of 8p per day (in 1849) for the work they performed (Riviere 1972). In the event that free laborers refused to work on the estate on which they were housed, they forfeited their right to housing and provision grounds as well as their pay.

In effect, planters coerced free laborers to stay on the estates by threats to eject the laborers from their homes (Riviere 1972). It was a powerful threat, as during years of occupation slaves had become attached to their

villages and after emancipation many believed that village ownership had passed to them. This belief extended to ownership of the provision grounds as well (Hall 1971, 1978; Mintz 1979, 1985).

As on other islands planter efforts to retain their workforce in conditions similar to those of slavery failed. Ultimately, the planters' thinly veiled attempts to maintain the pre-emancipation status quo through coercion alienated the work force to such a degree that laborer desertion became increasingly common. On Tobago, the tendency to desert the estates was apparently enabled less by the availability of unclaimed land as asserted by Mintz (1979), and more by the availability of currency. The purchasing power of the laborers, a purchasing power which began to develop under slavery, allowed them to buy land rather than acquire land by other means. Contemporary observers noted very little squatting on crown lands or uncultivated estate lands during the post-emancipation era (in Niddrie 1961:43).

The efforts of Tobago's laborers to acquire land were abetted by planter responses to aberrant climatic conditions in the immediately pre- and post-emancipation years. The conditions took the form of a succession of severe droughts lasting from 1834 to 1843 that seriously affected sugar production on the island (Niddrie 1961:18). The results of the drought were greatly exacerbated by the Hurricane of 1847. In an effort to raise capital, as well as retain

laborers during this period, Tobago planters were forced to sell their workers small parcels or larger blocks of land on the borders of their estates. Though this land was marginal for cane production, its loss was keenly felt (Niddrie 1961). The fragmentation of estates that resulted was most prevalent in the Courland River valley, dominated by St. David's Parish. By 1887, the Courland River valley had been almost entirely denuded of trees. While the planter efforts may have successfully raised capital, they also further enhanced the ability of laborers to pursue an independent livelihood. By 1842 the planter's efforts to raise capital by selling land to their laborers had allowed up to 40 percent of the workforce to quit the estates (Riviere 1972:13).

By acquiring land the Afro-tobagonian population of Tobago acquired the freedom in fact that had been given to them by law in 1838. Though independently possessing the means to an adequate livelihood by virtue of their status as landowners, however, many freeholders continued to participate in sugar production. By 1853 the number of freeholds had risen to 2367 from 658 in 1845 (Riviere 1972:16). With fewer laborers to work their fields, the planters instituted a system of metayage.

The apparent success of metayage on Tobago is attested to by the fact that it was kept in place until the 1940s, when sugar production effectively ceased. A local

informant, now aged 72, remembered working under a modified metayage system at Orange Hill Estate as a young man of 15 or 20. He, along with his father and brother, worked a 1.5 to two acre piece of land owned by the estate. The family was responsible for clearing the field, and for planting, tending and cutting the cane. To accomplish these tasks, they would enlist the help of other metayers, after which the they would help their helpers.

Cane was cut when the landowner informed the men that the sugar production equipment was available. The metayers would be paid from the resulting sugar. Depending on how much work they had done, they could get up to half. In years that they could afford to pay a rent for the land, they would get most of the sugar, while giving some to the estate owner for the use of the milling and boiling equipment.

Conclusion

This study has attempted to elucidate the functional aspects of settlement patterning on Tobagonian sugar estates. Since the appearance of Gordon R. Willey's pioneering Prehistoric Settlement Patterns of the Virú Valley in 1953, settlement pattern studies have been a useful tool in the prehistoric archaeological kit. Historical archaeologists have also used settlement patterns to their advantage (e.g., Adams 1990; Lewis 1984; Paynter

1982; Warren and O'Brien 1984). Despite the utility of settlement pattern studies, however, plantation archaeologists have rarely focused on a regional data-base during fieldwork, concentrating instead on individual sites. Only during the analysis stage has comparative data been utilized.

Plantation archaeologists in the southeastern United States have focused primarily on questions of plantation social structure (e.g., Lewis 1985; Orser 1988; Otto 1975, 1977, 1980) and slave lifeways (e.g., Brown and Cooper 1990; Wheaton and Garrow 1985). In part this reflects the statement that historical archaeology can make the greatest contributions through studies of "issues for which there is simply inadequate documentation" (Deagan 1988:9). Thus, slaves and their place in the plantation power structure constitute important subjects because they are rarely discussed in the historical documents.

Like those of their North American counterparts, research questions of plantation archaeologists in the Caribbean have primarily focused on issues relating to slaves. The most successful efforts have been those which elucidate African retentions and cultural change in the slave population. For example, Handler and Lange (1978) have closely examined these issues with regard to mortuary patterns on Barbados, while Armstrong (1990) has studied the

changes that occurred in slave domestic life with emancipation on Jamaica.

In addition to its obvious utility for the study of disenfranchised peoples, historical archaeology can contribute to our understanding of well documented groups in ways that history cannot. While documents are an important source of information, it is axiomatic to say that their writers had a particular agenda, whether it be personal, social or political, in mind while writing. As a result, without careful analysis, documentary sources may confuse our understanding of history as much as they contribute to it. Historical archaeologists, because they rely on an alternative data-base which was produced as an unconscious byproduct of behavior rather than as a conscious attempt to influence others, have an independent means of confirming, negating or interpreting information in documentary sources. This dissertation has focused primarily on estate owners. It has demonstrated that estate layout reflects as much their unstated goals, goals that related to their social standing in the community and to their economic well being, as the goals they made explicit in their writings.

Beyond issues of which groups constitute an important focus of study for historical archaeologists is the issue of what questions to ask. If studies of "the complex relationships which bond cultural institutions" are also valid research issues for historical archaeologists as

stated by Cleland (1988:14), then the focus on individual plantations that has characterized plantation archaeology should be extended to incorporate groups of plantations. This dissertation has begun to define the relationship between neighboring estates by focusing on regional settlement patterns rather than individual sites. This approach indicates that on Tobago, while all estate owners participated in an often lucrative economic enterprise by producing sugar, molasses and rum for export, only a few invested in the infrastructure necessary to produce goods for local consumption. In conjunction with documentary sources that indicated the higher economic and political status of these individuals in Tobagonian society, it was suggested that a hierarchy of estates existed on the island, as well as on other islands in the Caribbean, and that this hierarchy may be defined through archaeological techniques in the absence of historic documentation.

In large part the architectural environment of Tobago was created by the planters. It was also inhabited, however, by slaves and later by free laborers of African descent. Though they had less influence on the architectural features that make up the most visible portion of the archaeological record and which were the primary focus of this research, the archaeological and ethnohistoric records indicate that, within the context of slavery, slaves created and maintained a lifestyle that was distinctly

different from that of the Europeans. Unfortunately, settlement pattern studies at a survey level are poorly suited to the study of these lifeways. Slave-influenced patterning is most likely to be apparent within their village areas. Given the poor preservation of above ground architectural remains in estate villages, extensive excavation is required to reconstruct village proxemics. While this dissertation attempted to examine the spatial patterning within a Tobagonian estate village insufficient time for excavation severely limited the amount of information recovered. Though several hypotheses relating to internal patterning are suggested, without additional excavation they must remain hypotheses.

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BIOGRAPHICAL SKETCH

Christopher Ohm Clement was born on April 2, 1960, in Hanover, New Hampshire. With the exception of one year spent at the Robert College Community School, Istanbul, Turkey, he attended the Hanover public school system until the end of his first year of high school. The remainder of his high school years were spent at the Northfield-Mt. Hermon School.

Mr. Clement matriculated at the Colorado College in 1978. After two years he took a leave of absence, returning in 1981. His first course upon return was an archaeological field school in southeastern Colorado, which awakened a latent interest in archaeology developed during his year in Turkey, when he lived among the ruins of Constantinople and visited many classical Greek and Roman sites with his family. Mr. Clement received his B.A. from the Colorado College in 1983, majoring in anthropology.

Although he entered the University of Florida intending to focus on historical archaeology, Mr. Clement was fortunate to study under Dr. Michael E. Moseley at the master's level. Working with Dr. Moseley, Mr. Clement began to look at archaeological data from a regional perspective. His master's thesis, completed in 1988, examines the effect

of gradual tectonic uplift and periodic El Niños on a spring-fed irrigation system in coastal Peru.

In addition to his academic research in Peru and the Caribbean, Mr. Clement has undertaken fieldwork on a contractual basis in the Southeast and New England. He is currently a principal investigator with the South Carolina Institute of Archaeology and Anthropology Cultural Resource Consulting Division.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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